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HP Professional

THE INDEPENDENT MAGAZINE FOR NEWWAVE COMPUTING ▲ VOL.5 NO.2

FEBRUARY 1991 ▲ $4.00

NEW WAVE

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- AI [illegible] Smart Solut[illegible] For Field[illegible]ice
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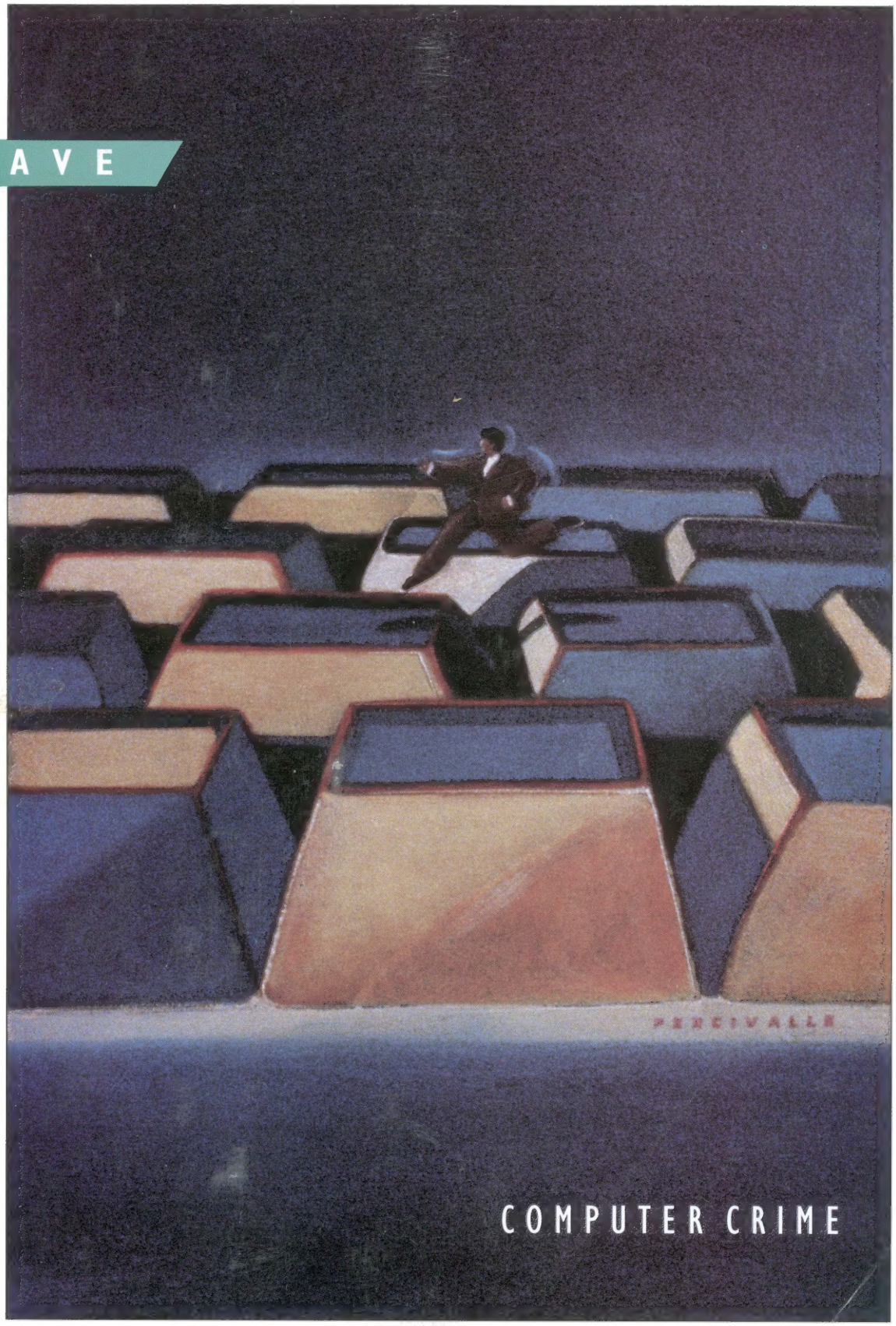

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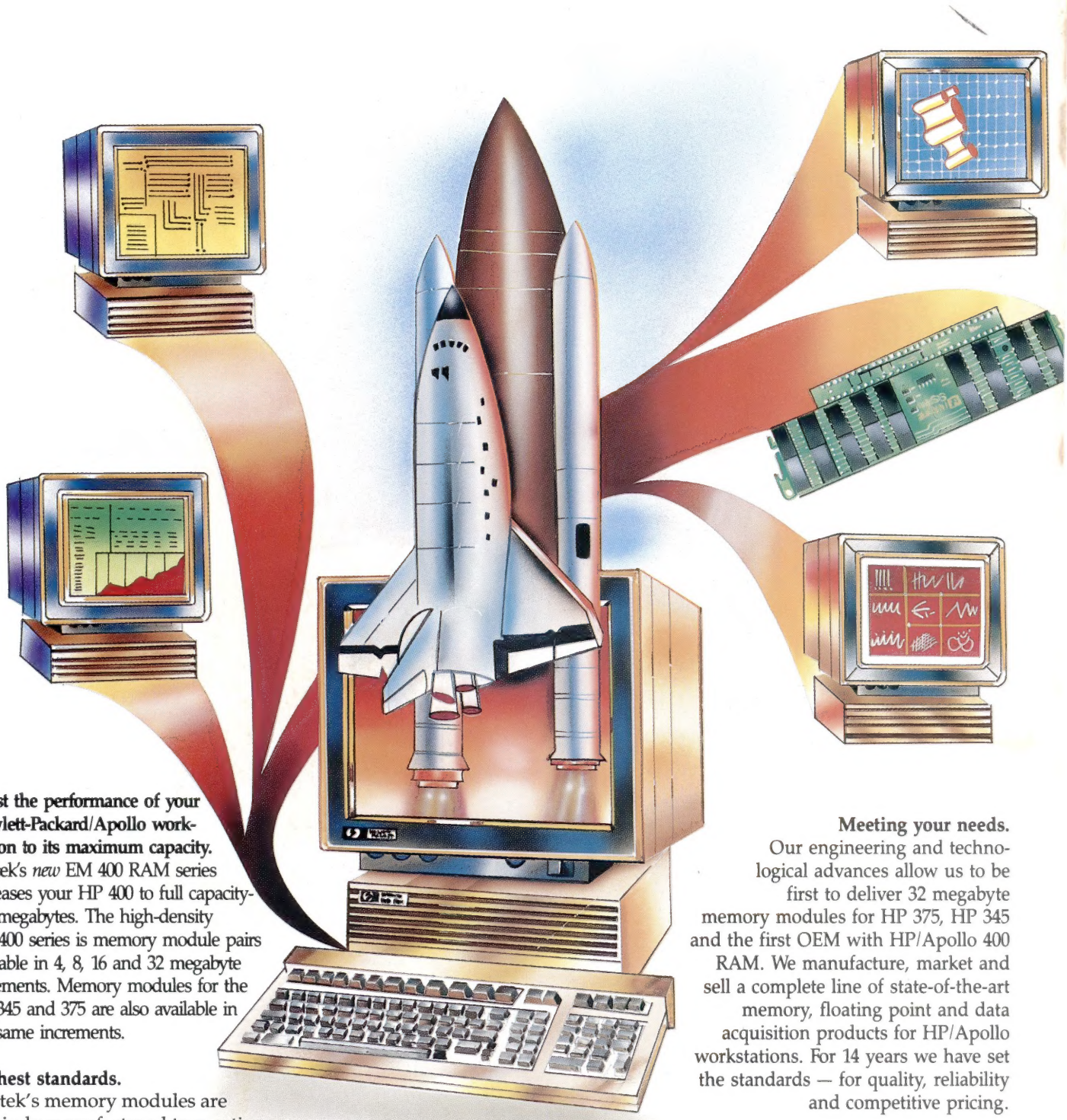

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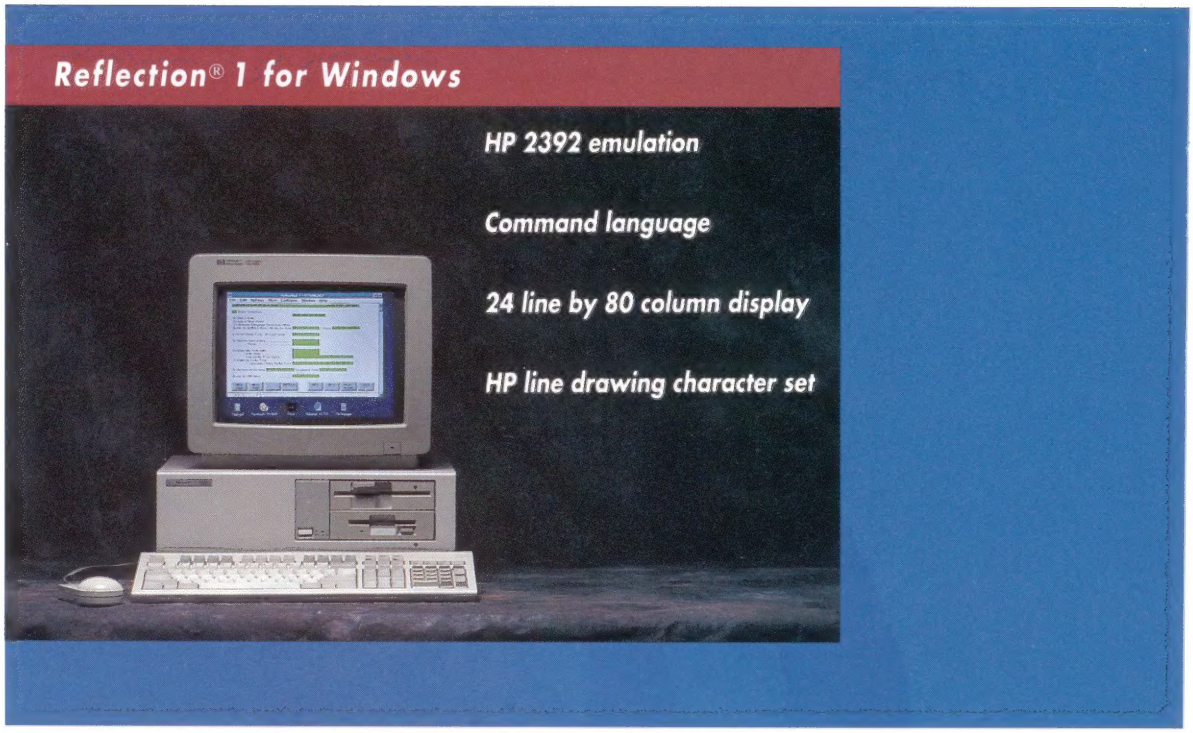

Since 1984, we at Tymlabs have been developing and shipping products based on the belief that graphical user interfaces were the wave of the future. The folks at Walker Richer & Quinn, on the other hand, have focused almost solely on the DOS world.

When it comes to Windows, WRQ doesn't share the Tymlabs vision. As recently as 1988, WRQ told you that Windows would never fly. That same year we shipped Session for Windows 2.0. Last June, just three weeks after the Microsoft release, we shipped a version of Session for the amazing new Windows 3.0.

Now, as WRQ begins to ship their first Windows product, we're shipping two, all-new versions of Session for Windows and NewWave. Both packed with enhancements that stem from years of Windows experience.

Head to Head. Like Reflection, Session can emulate a 2392 terminal . . . but Session adds 700/92, 700/94, HP ANSI, and VT-100 emulation. While Reflection provides only a 24 x 80 character display, Session lets you set your window for up to 160 columns and as many lines as your monitor will allow.

Like Reflection, Session has a scripting language . . . but Session's language, TermTalk, brings a modern, English-like approach to task automation. It even lets you turn on a recorder that builds scripts for you as you work. And TermTalk was designed to interface directly with NewWave's Agent Task Language.

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- HP 2397 text color pairs
- Full support of Microsoft's DDE with both client and server models
- Full native NewWave support

But there's more to the story. Consider this.

It used to be enough just to emulate terminals and to do simple file transfers. These days, integration is the key, whether it's with other PC applications or with your HP host.

Session supports Microsoft's Dynamic Data Exchange . . . Reflection doesn't. DDE lets you link Windows applications together. This means an Excel spreadsheet can automatically use Session to retrieve data from a host database. Your users won't even have to know Session is running. And because DDE is an industry standard, Session can talk to all the hot new Windows applications.

If you plan to adopt HP's NewWave Computing as your integration strategy, then you should know that Session supports HP NewWave today . . . Reflection doesn't. With Session for New Wave, your users can transfer files or run scripts with a simple drag and drop. Or better yet, they can let their Agents do the work.

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CIRCLE 141 ON READER CARD

Welcome Downsizers!

Everybody's talking about downsizing these days. You hear horror stories about companies phasing out their MIS departments or abandoning mainframes for PC networks. But how much of this can you really be expected to believe? Frankly, I'm tempted to think some workstation and PC vendors are making a lot of noise about a few isolated incidents. Besides, companies downsizing that radically probably had too much horsepower to begin with.

The fact is you've probably already saved your company a great deal of money. If HP sales figures are any indication, many of our newest readers come from the ranks of those who left behind Big Blue mainframes with big red budgets. According to Rich Sevcik, general manager of HP's Commercial Systems Division, "About 30 percent of HP 3000 orders are new HP customers, and we are in head-to-head competition with IBM 3090-class systems." To the newcomers, we say: Welcome to NewWave Computing—the thinking manager's alternative to downsizing.

HP's vision of an integrated information utility based on standards and open systems offers a more practical and forward-looking alternative than slash and burn techniques. HP (and many HP users) prepared themselves early for the change in priorities that's taking place today. In fact, you could think of NewWave Computing as an investment in future cost reductions. Standard interfaces, networking protocols and operating systems together with portable software and distributed processing applications should, ultimately, result in more capability for less money.

HP's support for seven new client-server software applications running on the HP 3000 is a case in point. (See News and Trends, page 14) These applications come from major third-party software developers, such as Collier-Jackson and Mitchell Humphrey, and they meet the needs of customers in a variety of vertical markets.

Software initiatives like this one save users money in two ways. First, the applications are targeted directly at the demands of specific industries. Unlike general purpose client-server software, application-specific packages relieve users from the expensive task of developing their own customized code.

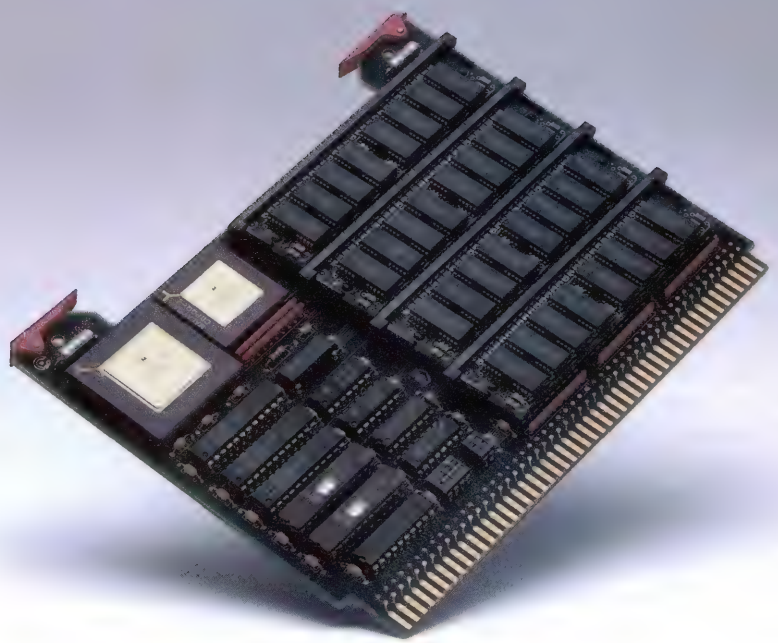
Second and more important, HP has selected applications that allow customers to integrate all of their company's minicomputers, workstations and PCs in a client-server environment. HP refers to this approach as "enterprise-wide integration." Whatever label you give it, this kind of integrated computing offers the potential for increased productivity and communications within an organization, in return for a relatively small investment.

In other words, even in a centralized data processing environment, the HP 3000 offers more than just low cost of ownership. POSIX compliance, the promise of portable Netware, and new client-server applications software all offer links to the future of computing.

Competing mainframe and minicomputer vendors haven't emphasized connectivity, open systems capabilities or client-server architecture the way HP has. And, according to HP, it shows—in their sales. The NewWave Computing strategy articulates the industry's move toward less costly, more cooperative computing and highlights a host of stepping stones along the way.

TURBO-33

HP Series 9000 Accelerator



General Description

The TURBO-33 is a 33 Mhz accelerator card for Hewlett Packard Series 9000 computers. The card contains a Motorola 68020 processor, an optional Motorola 68882 coprocessor and 1 to 4 megabytes of 80 nanosecond dynamic ram. An internal 32 bit data bus provides high speed data transfers between the processors and the memory.

Compatible Models

The TURBO-33 is compatible with the HP 216, 217, 220, 226, 236, 237, 310 and 320 workstations. The card uses one slot in the host computer.

BASIC and PASCAL

The TURBO-33 is designed for the BASIC and PASCAL operating systems. No modifications are required for user programs.

Speed Improvement

Programs run from 6 to over 100 times faster.

The speed increase depends on the type of computation. The following table shows the range of speed improvements.

PROGRAM TYPE	COMPUTATION TYPE	SPEED INCREASE
Compiled Programs	Integer Arithmetic	6 to 8
	Real Arithmetic	29 to 50
	Real Transcendental	142 to 293
Interpreted Programs	Integer Arithmetic	6 to 7
	Real Arithmetic	9 to 11
	Real Transcendental	32 to 63

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Success is both elusive and unpredictable. Some of our best and most determined efforts fail to reach the lofty objectives we set for ourselves, while other endeavors receiving less of our attention, bring greater returns. The realms of high technology are rife with costly scalings of Herculean heights for little or for naught.

So why the deleted expletive is HP's LaserJet printer family so infuriatingly successful? Marketing consultant types say HP owns 70 percent or more of the laser printer market. This is a monumental market share considering how many other companies make computer peripherals and how tough it is to market consumer products.

Development of the LaserJet was hardly a "bet-your-company" kind of effort. In fact, the core technology for the printer was not developed by Hewlett-Packard. HP buys the printer engine from Canon, then wraps the remainder of the product around it. That's not to say the product isn't a good one. It surely deserves its reputation. But how can the LaserJet scream so far out in front of all its competitors that not even IBM can take it on successfully? And, why can't other HP efforts do as well? Heck, why can't they do half as well?

Everything Lined Up Right

We join an interview in progress with Cathy Lyons, product marketing manager for HP's Boise Printer Division where LaserJet printers are built.

"LaserJet success may be unfair to measure against because it is very rare that you are so phenomenally successful with a product," she says.

The LaserJet is at the fore of a fast-paced consumer marketplace, second only to the personal computer itself in the high-tech field.

This kind of success only comes, she says, "when everything is lined up just right. We were there at the right time and the right place with the right product." At the time the LaserJet was introduced, products with comparable printing quality cost about $10,000, while the LaserJet sold at introduction for about $3,500, says Lyons.

What surprises her more than the initial success of the product is the fact that HP has been able to sustain and expand upon that success. "A lot of people can hit a home run on a fluke, but to continue to hit them time and again, year after year is an accomplishment," she says. "We listen to our customers, we watch the competition and we structure ourselves for success."

Sound simplistic? Maybe it is. At introduction, the LaserJet offered a great price/performance bargain, which has grown into widespread brand recognition. That great start gave the LaserJet an edge that may be insurmountable until some new and substantially more impressive price/performance bargain comes along.

"Today customers are buying a brand," says Lyons of the printer. "Before, anybody could buy the printer engine and put whatever they wanted on it. Today, the LaserJet brand name is so powerful that the customer attributes a lot to the brand. That's why competitors have such a tough time. They haven't come up with anything powerful enough to break through and tear the customer away. IBM tried with a huge $25 million advertising campaign — but just recently, they sold off the production plant."

The LaserJet made it to the big time in a big way, but staying successful is a continuous process. HP spends a great deal of money on advertising to make sure that brand name stays highly visible to the majority of folks considering a new printer purchase. Ten years ago, says Lyons, spending money for a national advertising campaign for peripherals would have been unthinkable and useless. Now it is essential. "Expenditures on ads have gone up tremendously," she says.

The LaserJet is at the fore of a fast-paced consumer marketplace, second only to the personal computer itself in the high-tech field. Innovation and product differentiation are crucial, so HP keeps improving the product, working to meet customer needs as they arise. Because of short product life cycles in the printer market, those needs must be met at a fierce pace.

"You're lucky if a product remains

Closing Arguments

Only ORACLE supports virtually every vendor's software, hardware and network.

Today, some companies claim that their software products are "open." They may even graft the word onto their product names. It is a confusing situation, but a clear definition of "open" is finally emerging.

Software is "open" only if it adheres to industry standards and works with products from

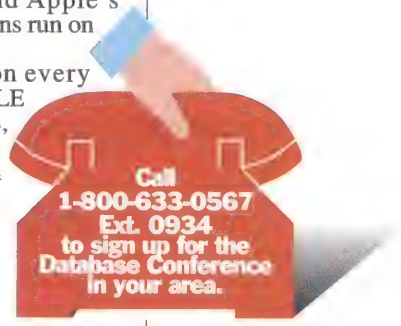
other vendors.

More specifically, a database is open if it works with other vendors' databases. For example, ORACLE now provides access to HP TurboIMAGE in addition to IBM's DB/2 and DEC's RMS.

An open database should also work with other vendors' applications. ORACLE supports PC and MAC software like Lotus 1-2-3, WordPerfect, Borland's Paradox and Apple's Hypercard. Even Dbase applications run on ORACLE.

Software is open if it runs on every vendor's operating system. ORACLE runs on MPE XL, UNIX, MS-DOS, Mac OS, VMS, MVS and virtually every other operating system on the market.

And software is open if it supports every vendor's network. ORACLE supports HP AdvanceNet, TCP/IP, LAN Manager, NetBIOS, DECnet, Novell's SPX/IPX, X.25 and many others.



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competitive for 18 months," says Lyons. "The competitive picture drives a great bargain for the user. That's the basis for our whole capitalistic society." And as all good capitalists know, it's either feast now or some other capitalist eats your lunch.

A Little Room To Roam

So why hasn't HP been able to duplicate this knockout punch in other markets? Frankly, the discussion would fill a book, but in defense of HP, there is no simple response to the question. However, an interesting factor surfaces in the peripherals business.

At the close of the 70s, when HP saw things like RISC looming on the horizon, it began centralizing its computer business to gain more control over its direction. Prior to that time, HP divisions functioned with a tremendous amount of autonomy. A project at one division toyed with an electronic cattle prod, while another actually resulted in a limited production run of stereo amplifiers. Some of the HP old-timers probably have Barney Oliver amplifiers in their homes. Knowing HP, chances are they still work.

That kind of autonomy may be too great a price to pay in the wild stampeding world of competitive computing. HP pulled in the reins on its galloping divisions, prodding them back into the corral. This was the birth of HP's computer group, at times fiercely disliked by employees at outlying divisions. But the group tied diverse divisions together in search of common goals and methods.

While the computer group was getting saddle-broken, an odd-ball division in San Diego was largely left alone. They made peripherals, products that didn't seem to fit in either the instrument or computer worlds. Being observant, these folks decided to shelve all future plans for cattle prods and stereo components, but kept the inventive and creative juices flowing. They were not subjected to as much over-the-shoulder peering from superiors as were their peers in the computer group. This division spawned the peripherals group and the philosophy that resulted in the LaserJet. ■

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CIRCLE 152 ON READER CARD

HP Sets New Standard For Business Systems And Servers

New Systems Allow Room For Growth

Designed to accommodate room for growth and future technology advances, Hewlett-Packard introduced five business systems and servers that deliver mainframe-level performance at minicomputer size and price.

Based on HP's PA-RISC technology, four of the new computers provide triple the performance that was previously available in the midrange of the HP 9000 and HP 3000 families. The fifth computer broadens the performance of the high-end of the HP 9000 family.

The computers are designed for client-server and multiuser applications. They include the midrange HP 9000 Models 842S and 852S servers, the midrange HP 3000 Series 948 and 958 systems and servers and the high-end HP 9000 Model 865S server.

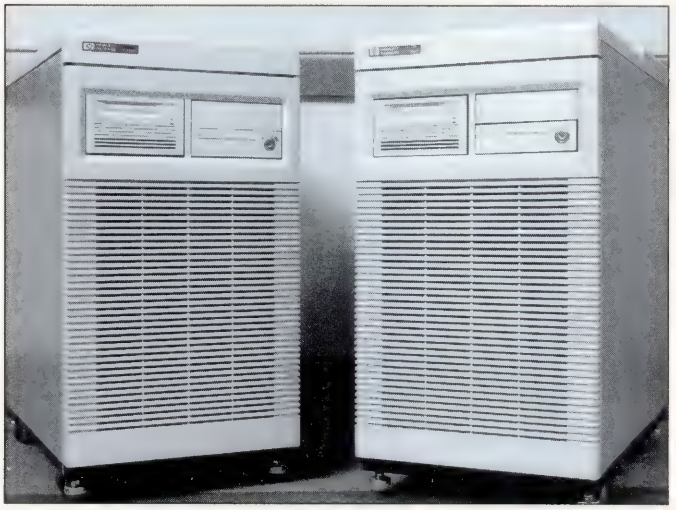
The computers combine the two technologies of submicron CMOS (complementary metal-oxide semiconductor) and PA-RISC.

Submicron CMOS technology allows HP to design extremely dense chips that increase processor performance. PA-RISC allows HP to build systems that are less expensive than comparable systems that use traditional architectures. This announcement represents the first implementation of these technologies for HP's midrange business systems and servers.

The new business systems and servers combine advances in processor performance with a broad set of capabilities. As a result, customers can run mission-critical applications without the cost and cumbersome operation of mainframes.

All HP 9000 and HP 3000 systems and servers offer increased performance through simple, non-disruptive field upgrades.

HP also announced a networking product, HP-UX Logical Unit 6.2 that allows communication between HP 9000 systems and IBM mainframes over a Systems Network Architecture (SNA) network; and SwitchOver/UX, a product that automatically detects system failures and switches to a standby processor from a primary processor.



HP's PA-RISC HP 3000 Series 948 system offers Series 70 customers higher performance in a deskside computer.

Client-Server Solutions

HP also announced seven client-server applications for HP 3000 business servers. The applications together with the new systems offer hardware and software client-server solutions to HP customers.

HP will jointly market the following types of applications with these client-server application developers:

- ***Fourth Shift*** — Manufacturing MRP II.
- ***PeopleSoft*** — Human resource management.
- ***Distribution Resources*** — Wholesale distribution.
- ***CompuTrac*** — Legal.
- ***Mitchell Humphrey*** — Financials.
- ***Public Safety Systems*** — Public safety.
- ***Collier-Jackson*** — Financial accounting and human resources.

HP NewWave Access

HP also introduced HP NewWave Access, a graphical software program that provides PC users direct access to mission-critical data on HP 9000 and HP 3000 systems and servers. NewWave Access provides a link that integrates information from PC, minicomputer and mainframe databases into desktop applications.

HP NewWave Access also provides HP NewWave 3.0 users with a single, consistent window to enterprise-wide database information. It simplifies the process of incorporating this data in decision-support applications, documentaries and communications.

HP NewWave Access software extends the HP NewWave environment to include links to external data sources such as HP ALLBASE/SQL, Oracle, DB2, HP TurboIMAGE, as well as dBASE and R:BASE on PC networks.

Nothing Is Faster Than A Great Team.

In sailing, great teamwork wins races. The combination of a powerful sailboat and a skilled crew can't be beat. For high performance computing, there's another team that can't be beat; your workstations and our memory.

You see, Dataram memory is the perfect teammate for your workstation. No other memory gives you more speed and high performance than our technically superior boards.

But we give you more than speed. We assure our memory's quality and reliability with a Lifetime Guarantee and The Express Spares Program. We price our memory quite competitively. And we support it with an expert technical staff. In fact, since 1967, we've offered a full line of high performance memory products — with speeds up to 250 MHz.

For the ultimate in high performance computing, team your workstation with our memory. It's an unbeatable combination.

DEC	SUN	HP/Apollo	DG
VAXstation 3100	3/260 3/280	DN2500	AViiON
VAXstation 3200-3900	3/470 3/480	9000/340 DN3000	MV series
VAXstation 2000	4/260 4/280	9000/360 DN3500	
DECstation 2100/3100	SPARC 330 SPARC 370	9000/350 DN4000	**IBM**
MicroVAX II/III/IV	SPARC 490	9000/370 DN4500	RISCSys 6000
VAX 6000 Systems	1MB/4MB SIMMs		

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MCAD/MCAE Suppliers Broaden Support For HP Workstations

MSC/NASTRAN Available On HP-UX, Apollo Domain

Leading suppliers of mechanical computer-aided design and engineering (MCAD/MCAE) solutions now offer their software on a broader range of HP Apollo workstations.

The MCAD/MCAE suppliers are Aries Technology Inc., MacNeal-Schwendler Corp. and Structural Dynamics Research Corp.

HP is the leading supplier of technical workstations to the worldwide MCAD/MCAE marketplace according to Dataquest Inc., a market-research firm.

Also, MacNeal-Schwendler Corp. announced the availability of its MSC/NASTRAN finite-element analysis (FEA) software on the full suite of HP workstations running HP-UX or Apollo Domain.

Objectivity Inc. Supports HP's C++/SoftBench

Applications Developed Using Objectivity/DB

Objectivity Inc. announced its support for HP C++/SoftBench for development of applications using Objectivity/DB running on HP 9000 workstations.

HP SoftBench, part of HP's CASEdge program, is an extensible software development environment; HP C++/SoftBench is an integrated set of tools for object-oriented program development.

Objectivity/DB is an object-oriented DBMS that provides a full range of data modeling, management and development facilities for application developers.

Contact Objectivity Inc., 800 El Camino Real, 4th Floor, Menlo Park, CA 94025; (415) 688-8000.

Circle 377 on reader card

QizToRct Allows Quick Conversion To REACTOR

Rapid Migration To SPEEDWARE Environment

Infocentre Corp. announced the development of QizToRct by Beachwood, a group of SPEEDWARE consultants. QizToRct converts Quiz code into equivalent REACTOR statements that permit rapid migration to Infocentre's SPEEDWARE environment.

REACTOR is the non-procedural fourth generation language at the heart of the SPEEDWARE environment.

QizToRct can convert a single Quiz program, or a group of Quiz programs, creating complete, menu-driven applications in SPEEDWARE. One REACTOR file is produced for each Quiz program, as well as a REACTOR specification file encompassing menus, exec's and file definitions.

The REACTOR specification file can be run just as it is, or the individual REACTOR files can be imported directly into DESIGNER, the application development component in Infocentre's SPEEDWARE environment. With DESIGNER, users can create screens, menus, reports and transaction processing routines.

Contact Infocentre Ltd., 7420 Airport Rd., Ste. 201, Mississauga, ON L4T 4E5; (416) 678-1841.

Circle 380 on reader card

UNIX Users Access PROVOXplus Instrumentation Systems

Fisher Controls, HP Jointly Develop CHIP

Application software running on an HP 9000 Series 800 UNIX-based system now has the ability to access and change process control information such as operating and tuning data, controller register data, and batch recipe information.

Fisher Controls' Computer Highway Interface Package (CHIP) provides the access and allows this integration tool to be applied for user developed application software, process data collection, information analysis, optimization, networking and integration of foreign devices.

This new CHIP product was jointly developed by HP and Fisher Controls. It allows data to move directly between the PROVOXplus system and a software application, Industrial Systems Inc.'s CIM/21 product. The CHIP product is offered in three sizes: 500-point, 2500-point and 10,000-point databases.

Contact Fisher Controls Int'l. Inc., 8301 Cameron Rd., Austin, TX 78753; (515) 754-2452.

Circle 378 on reader card

Rewritable Optical Drives for Hewlett-Packard Computers with HP-IB Interface

Set Your Sights on Optical – 650MB in One Small Cartridge

Model 7600 Rewritable Magneto-Optical Disk Drive

- Huge 650MB capacity per compact cartridge
- Quick, random access to large amounts of data
- Convenient, removable 5.25 inch cartridge
- Perfect for high security – take it with you or lock it up
- Increase capacity by adding a cartridge
- Economical archival storage with "online" accessibility
- Very rugged and easily transportable
- Easily installed, uncomplicated to use
- Very reliable (head crashes are impossible)
- Long-life media (10-year minimum)
- No periodic media reconditioning required
- Available for HP 9000, 3000, and 1000 computers

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See us at INTEREX Booth #235

Joint Venture To Produce First Tempest X Terminals

Human Designed Systems Provide X Window Terminals To Delta Data Systems

Human Designed Systems Inc. announced a multimillion dollar OEM contract to provide versions of its View-Station Plus line of X Window terminals to Delta Data Systems.

Delta Data will purchase color and monochrome versions of HDS' X Window terminals and modify them to comply with government Tempest regulations designed to reduce emissions from the terminal. The Tempest versions of the X Window terminals will be sold under the Delta Data label and are the first Tempest X Window terminals on the market.

Contact Human Designed Systems, 421 Feheley Dr., King of Prussia, PA 19406; (215) 277-8300.

Circle 381 on reader card

NCR Integrates HP Disk Drives

Signs Multimillion-Dollar Agreement With HP

HP will supply high-capacity 5 1/4-inch disk drives to NCR Corp. (Dayton, OH). The companies signed a multimillion-dollar OEM agreement.

NCR plans to integrate the high-performance HP 97548S and 97548D disk drives in selected NCR systems used in the retail and banking industries.

The disk drives have 795 MB of unformatted storage capacity and an advanced implementation of SCSI. The HP 97548S uses a single-ended SCSI controller; the HP 97548D offers a differential SCSI controller.

HP, Control Data Sign Contract

Optical-Disk Libraries Integrated With 4000 Series Computers

HP and Control Data Corp. announced a multimillion-dollar OEM agreement under which Control Data will purchase HP C1710A optical disk libraries.

Control Data will integrate the 20-GB optical disk libraries into its 4000 series of computer systems. Control Data also plans to include the HP optical disk libraries in its Automated Workstation Backup System (AWBUS).

AWBUS provides a menu-driven environment that performs full, incremental or special workstation backups. It requires no user or operator action to initiate a backup once the system is configured.

For Your Information

- In a research report by Patricia Seybold's Office Computing Group, the HP 9000 Series 800 was found to be a "reliable and robust computing platform." The report focuses on the system's performance metrics and on its architectural foundation. It includes analysis of HP-UX and HP's PA-RISC technology. (617) 742-5200.
- Computer Resource Group (Denver, CO) announced the opening of a new regional office in Dallas, TX, to serve the Southwestern HP computer systems community. (214) 242-6660.
- Indigo Software (Ottawa, Ontario) has changed the name of its U.S. arm to JetForm Corp. and relocated its corporate headquarters to the Boston area. Contact JetForm Corp., 163 Pioneer Dr., P.O. Box 606, Leominster, MA 01453; (613) 594-3026.
- HP announced U.S. list price reductions on all individual scalable-typeface products and introduced a collection of 26 scalable types for use with WordPerfect. The reductions affect two scalable-typeface cartridges and five disk collections. The U.S. list price for cartridges will be reduced from $339 to $349. Disk collections will be reduced from $199 to $159. (619) 592-4676.
- Lawson Associates Inc., a developer of commercial application software for mid-sized corporations, has become an HP Value-Added Business.

Boatmen's Bancshares Chooses DSI, HP

InTrader System To Automate Investment-Banking Services

Digital Solutions Inc. (DSI) and HP announced that Boatmen's Bancshares Inc. selected DSI's InTrader System to become the technological foundation for its investment-banking services on a network of more than 100 workstations, X terminals and servers from HP.

Boatmen's, a St. Louis-based bank holding company with $15 billion in assets, will automate its entire investment trading and sales operations via a telecommunications network designed by DSI and HP. The network will integrate Boatmen's three trading floors, as well as 16 of its more than 200 U.S. offices.

DSI's InTrader is a UNIX-based, online software package designed to manage the front- and back-office operations of trading environments. The InTrader/HP solution is an implementation of HP's NewWave Computing strategy, using 68 HP Apollo 9000 Series 400 workstations, 62 HP 700/X terminals and two HP 9000 Model 645 database

NOW THAT 10GB FITS ON AN 8MM TAPE, WHAT ARE YOU WAITING FOR?

You don't need to wait hours to change tapes.

You don't need to wait months for other storage technologies to catch up.

One 8mm tape drive will already deliver more than they promise.

It's the digital CY-8200, now with optional data compression. And you can get it exclusively from Contemporary Cybernetics Group.

With data compression, the CY-8200 can quadruple the amount of data you can load on an 8mm cassette that fits neatly in your shirt pocket. Meaning the already tremendous savings in man hours, media costs, storage and shipping are multiplied by four.

Until now, the best 8mm drive on the market stored an impressive 2.5GB per tape at speeds up to 15 MB per minute.

True "Plug-And-Play" Compatibility With:

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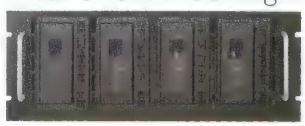
Alpha Micro	DEC HSC	IBM AS/400	Plexus
Altos	DEC Q-Bus	Macintosh	Prime
Apollo	DEC TU/TA81	NCR	Pyramid
Arix	DEC Unibus	Novell	Sequent
AT&T	Gould	PC 386/ix	Sun
Convergent	HP	PC MS-DOS	Unisys
Data General	IBM RT	PC Xenix/Unix	Wang

and more...

Our data compression option allows you to write up to 10 GB per tape at up to 60 MB per minute. Completely unattended.

Of course, the data compression feature is switch-selectable, so you can turn off data compression to read and write standard 8mm tapes.

Plus it's a simple upgrade for the best tape drive built: our CY-8200. Offering a complete range of standard interfaces, a 2-line, 40-column display option, and optional security card encryption. And assuring you of full support and a 12-month warranty from the leader in advanced 8mm helical scan technology.



The CY-8200 with data compression will remain the best value in data storage for a long time to come. So now you've got many good reasons for calling us today at (804) 873-0900 and no good reason for waiting.

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CIRCLE 112 ON READER CARD

International Insights

HP Germany Selects MiniSoft Software

Chosen For Administrative Organizations

MiniSoft announced that HP Germany selected the MiniSoft line of word processing software to be used as part of HP's solution for town, district and city administrative organizations throughout Germany.

MiniSoft's localized version of MiniWord, DeskEdit and ToolKit fulfilled all of HP's requirements. HP plans to use the ToolKit to integrate MiniWord and DeskEdit into several vertical packages marketed by its German sales force.

Contact MiniSoft Inc., 16315 NE 87th, Ste. B101, Redmond, WA 98052; (800) 682-0200.

Circle 376 on reader card

Frame Technology Establishes New Operations In Europe

Local Service And Support Enhanced In European Market

Frame Technology, a supplier of workstation publishing software for UNIX and Macintosh computers, announced that it's expanding its commitment to the European market by opening two new operations in Europe.

The first is the European Support Operation that will provide local service and support, as well as manufacturing, development and quality assurance capabilities, for the European market. The second is a new network of Frame sales and marketing support staff who will work directly with Frame's European distributors to expand the company's presence in the marketplace.

The European Support Operation will provide Frame's European distribution partners local services including: manufacturing and distribution of localized versions of Frame's products and documentation for leasing UNIX platforms, the Macintosh and NeXT computers; telephone-based technical support services for Frame's European distributors; Translation of software, documentation, packaging and online help into specific European languages; design and creation of new features required to support the European market.

The European Support Operation also will provide porting assistance for European hardware companies who wish to offer FrameMaker on their platforms.

Contact Frame Technology, 1010 Rincon Circle, San Jose, CA 95131; (408) 433-3311.

Circle 373 on reader card

Security Dynamics, Programatic Sign Distribution Agreement

SDI's Computer Security Products Sold In Italy

Security Dynamics Inc. (SDI) announced an agreement with Programatic s.r.l. (Italy), a distributor of computer and networking products, to distribute its computer security products in Italy.

Security Dynamics develops and markets secure access control computer security hardware and software products. SDI products protect against unauthorized users attempting to access valuable computer resources, but allow convenient access to authorized users.

SDI's product line includes the SecurID Card, a credit card-sized token carried by authorized users requiring computer access; and the Access Control Module (ACM), a software or hardware module that shields a computer from access by unauthorized users. Both employ a patented proprietary technology based on a time-synchronized algorithm that produces a one-time, unique, unpredictable access code, which automatically changes every 60 seconds.

Contact Security Dynamics, One Alewife Center, Cambridge, MA 02140-2312; (617) 547-7820.

Circle 374 on reader card

HP Vectra 486 Helps Produce Higher Quality Milk

Research Conducted In Helsinki, Finland

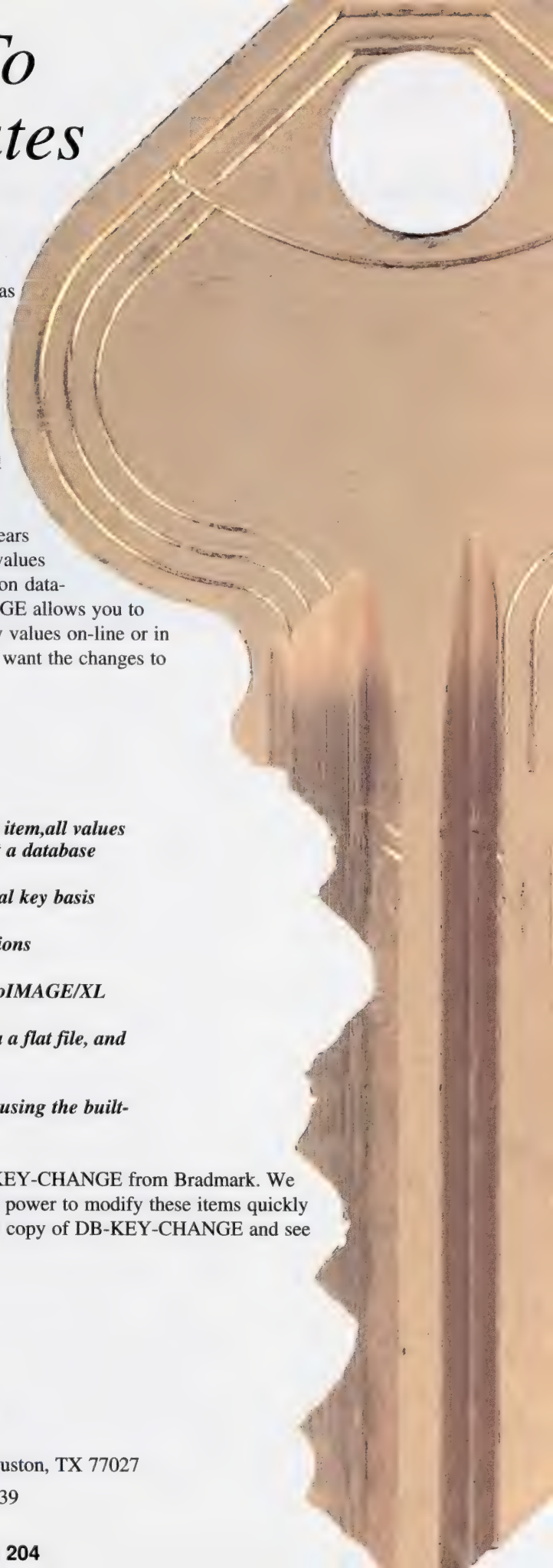
HP announced that the Agricultural Data Processing Centre (ADPC) in Helsinki, Finland selected the HP Vectra 486 PC for use in analyzing and matching genetic traits in dairy cows.

ADPC is using the HP Vectra 486 PC as a host computer to manage raw data on the protein and fat yields of about two million Finnish dairy cows.

Software developed by the Agricultural Research Centre of Finland and the University of Helsinki is used to calculate breeding indexes on the milk characteristics of selected cows and genetic traits of selected bulls.

The hardware configuration in the application consists of an HP Vectra 486 PC running the UNIX system-based operating system, equipped with 64 MB of RAM and 1.2 GB of mass storage. The HP Vectra 486 PC is connected with the mainframe at the Agricultural Data Processing Centre through the Token Ring network.

*We HaveThe **Key** To Critical Item Updates*



Critical item updates have long been a problem for the IMAGE database user. When a key value needs to be modified, the record has to be deleted and then added back to the database. That's not much fun, especially when there may be hundreds of keys that need altering. Critical item updates shouldn't be this difficult. And they aren't!

With DB-KEY-CHANGE, critical item updates are a 'snap'. DB-KEY-CHANGE allows you to modify the value of an item (critical or not) in all occurrences throughout a database. And for those of you that have been waiting for a solution, there's one available today. In fact, DB-KEY-CHANGE has been around for over six years and HP 3000 users everywhere have been modifying critical item values in their manufacturing, accounting, distribution and other application databases using DB-KEY-CHANGE. Why? Because DB-KEY-CHANGE allows you to modify key values quickly and easily. It even allows you to modify values on-line or in batch and gives you the option to exclude those sets that you don't want the changes to affect.

DB-KEY-CHANGE capabilities include the following:

Whether the key is used as a search, sort or regular item,all values can be modified in all their occurrences throughout a database

Alphanumeric item values can be altered on a partial key basis

Individual datasets can be excluded from modifications

Compatible with IMAGE, TurboIMAGE, and TurboIMAGE/XL

Value modifications can be processed in batch or via a flat file, and an ON-LINE job generator is also included

Modifications processed in batch can be monitored using the built-in TELESCOPE interface

If you're tired of changing key item values the hard way, get DB-KEY-CHANGE from Bradmark. We take the burden out of critical item updates, providing you with the power to modify these items quickly and easily. Call a Bradmark representative today for a ***FREE*** trial copy of DB-KEY-CHANGE and see for yourself. In the U.S., call ***1-800-ASK-BRAD***.

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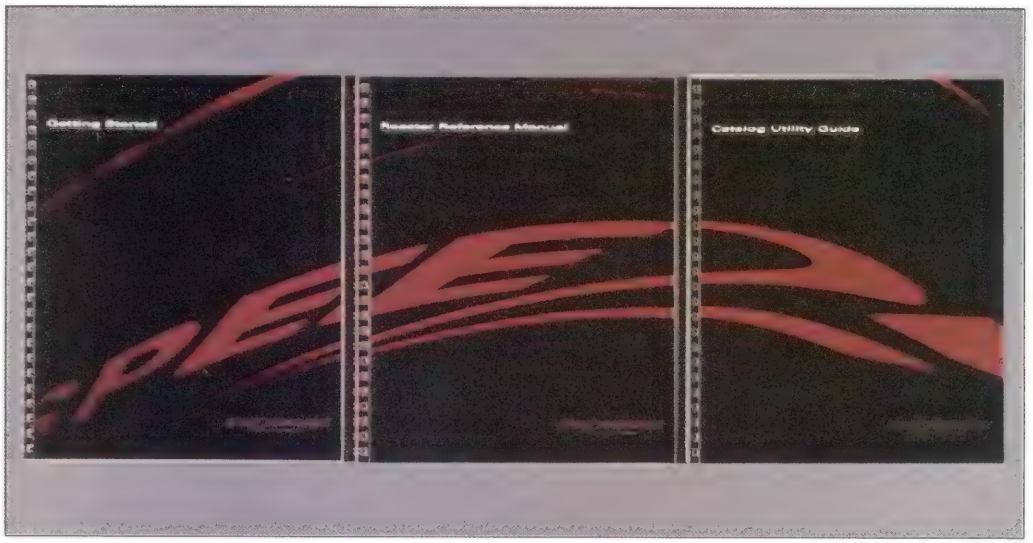

Infocentre's SPEEDWARE 6.0 Could Be The First True 5GL

Anyone involved in the development of application systems has to deal with an ugly truth: Productive and efficient software development is difficult to achieve. Inadequate or incomplete designs, missed deadlines, long project backlogs, maintenance nightmares, spaghetti code, undocumented algorithms, etc., are the sad results of this productivity crisis.

The cause is, at least in part, a paucity of quality, integrated tools for the analyst and programmer to use, not just at the coding or initial design phase, but throughout the entire software life cycle.

With the announcement of version 6.0 of the SPEEDWARE Environment, Infocentre Corp. is staking out a position at the forefront of vendors trying to provide a solution for software development in the Hewlett-Packard marketplace.

Infocentre, a Canadian-based company, was founded in 1976. In addition to SPEEDWARE, Infocentre markets vertical applications in the fields of travel, financial and library management.

Created by company founder and president Jean-Pierre Theoret, SPEEDWARE saw its start as an in-house solution to a programming backlog. The system succeeded so well at saving development time and costs that prospective customers soon approached Infocentre with requests to purchase Genasys, the first inception of SPEEDWARE.

The music that introduces one of SPEEDWARE's training videos suggests that with this release Infocentre is boldly going where no one has gone before. Perhaps that's hyperbole. Perhaps not. You, the user, will be the ultimate judge.

Surprise!

What is SPEEDWARE 6.0? You've probably looked at separate code generators, 4GLs, data dictionaries, documentation aids, source code libraries, screen handlers, purported CASE tools, etc. You may even have looked at SPEEDWARE itself and think that it's just another 4GL. Or, perhaps you've never heard of SPEEDWARE. Whatever the case, you're in for a serious surprise.

SPEEDWARE 6.0 is all of the above (4GL, code generator, data dictionary, etc.) and more, integrated into a complete software design, development and maintenance environment. Perhaps we should refer to it as a 5GL to distinguish it from other development tools in the marketplace.

Do you think you could stand not having to write another COBOL program? I don't know about you, but I can't think of too many (sane) programmers who'd pass up the chance to quit COBOL cold turkey.

Infocentre's REACTOR, which is now called SPEEDWARE/4GL in version 6.0, is SPEEDWARE's 4GL component. It's a language with both procedural and non-procedural elements that's capable of supporting an entire OLTP application. Screen handling, menus, dictionary support, application-level security, etc. are all integrated into SPEEDWARE/4GL.

DESIGNER, now referred to as SPEEDWARE/Designer is the CASE tool, master of the repository and code generator. That's right, I used the word "repository" not dictionary, because SPEEDWARE goes well beyond the tradi-

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CIRCLE 146 ON READER CARD

SPEEDWARE 6.0 represents the culmination of a four year effort by Infocentre to create a truly integrated application development environment.

tional dictionary concept to deal with objects and relationships. SPEEDWARE/Designer gives the user the ability to design, implement and maintain systems without programming. It creates sophisticated transaction processing systems complete with screens, menus, application-level security, logical data views and report generation features.

SPEEDWARE/Designer generates SPEEDWARE/4GL code that can then be "tweaked" if desired, or run on a standalone PC. A Design can be worked on simultaneously by several analysts. A SPEEDWARE/Designer user navigates through the design process via menus and screens or via a command-level interface. Those inevitable enhancements are much easier to handle with a tool such as SPEEDWARE/Designer.

SPEEDWARE/Designer is used to design the application data model from scratch or can load an existing database and use it as the data model. This gives the application designer complete freedom to make use of existing data models.

Screens are handled by SPEEDWARE/Windows and produce a consistent PC-like interface even on standard ASCII terminals. The SPEEDWARE screen system gives the designer full control of enhancements, such as color, line drawing, function keys, and supports pop-up windows and mouse control.

End-user reporting is handled by EasyReporter. In addition to the now fairly common paint-by-numbers reporting capability, Easy-Reporter has a graphics interface that allows the end-user to create bar, line or pie charts. EasyReporter contains an alphabetic reports dictionary and can be configured to support necessary data security requirements. And, downloading to PCs is handled easily and efficiently.

With SPEEDWARE 6.0, users of Hewlett-Packard systems now can venture into the brave new world of CASE. Many of the elements of lower and middle CASE are represented in the SPEEDWARE environment.

SPEEDWARE supports the traditional terminal-host arrangement but also is equally at home in the standalone PC environment, for which it offers an IMAGE look-a-like called SPEEDBASE, and in the client-server mode, for which it offers a special CS option. In fact, SPEEDWARE's PC integration capabilities are arguably the most complete on the market, supporting standalone operation, the client-server model or the distributed database model.

SPEEDWARE is now platform, operating system and DBMS independent. The new version has been completely rewritten in C and its repository/dictionary has been redesigned to be system independent in order to create a product that can be ported to many different platforms. Version 6.0 breaks all the previous ties to TurboIMAGE by utilizing a proprietary file structure for the repository and supporting access to both SQL and IMAGE databases, flat files and KSAM or KSAM-like structures. Plans call for version 6.0 to be available on the HP 3000 under both MPE and MPE XL, the HP 9000 under HP-UX, PCs under MS-DOS, OS/2, UNIX and SQL servers.

All You Need

SPEEDWARE 6.0 represents the culmination of a four year effort by Infocentre to create a truly integrated application development environment. The new version contains greater functionality, a higher level of integration and consistency, greater ease of use, platform independence, file and database independence, a repository, terminal independence coupled with a high performance, high function screen interface complete with pop-up windows and mouse support, end-user reporting capability, application security and PC-integration in both standalone and client-server modes. That's quite a bundle to say the least.

If your business is software development, SPEEDWARE 6.0 is a product you must consider. The cost of the product is CPU-based. Infocentre offers a full range of phone-in consulting services and training. —*John P. Burke, HP 3000 Editor.*

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See us at INTEREX Booth #317

TEMPTING

[BY GORDON MCLACHLAN]

When was the last time you dusted off the old disaster recovery plan? When was the last time you even thought about disaster recovery? Every once in a while, you'll read about some poor slob whose computer room got fried. It might jolt you for a second, but then you get a cup of coffee and start worrying about your immediate problems.

It's time for another jolt.

Disaster recovery planning is as old as disasters. Noah, for instance, had an excellent consultant and a very good disaster recovery plan. Where would we be today if he had gone off to get another cup of coffee?

Disaster recovery plans, or contingency plans, are critical for all organizations that use and rely on computer systems. Unfortunately, many of you, if you even have formal plans, have ones that are outdated or inadequate. Working without an effective plan is playing the odds, and you might be surprised to find out how bad the odds are and what it would cost your company if you lost the bet.

A few years ago, most computer systems were used for counting the corporate beans. Now, it's not so simple. If you lost your computers, what else would you lose? Your customer files? Orders? Product designs? Could you still process and fill orders? Could you bill your customers or pay the bills you owed? There's another factor to consider: The use of networks has proliferated, and that makes your computer systems even

FATE

Don't Let Disaster Recovery Plans Simmer On A Back Burner

more vulnerable. The odds of something nasty happening have increased dramatically.

A JOURNEY OF A thousand miles starts with but a single step. How do you eat an elephant? One bite at a time. Need any more platitudes? You've got to start somewhere.

The first thing to do is decide you want a plan and commit to doing it. This, like walking a thousand miles, or eating a pachyderm, is easier said than done. Good plans take time, and time is money. Disaster recovery plans are also boring. They require a management commitment to dedicate manpower and money to create something that, hopefully, you'll never use.

This is one of those cases where an immense and deeply entrenched MIS bureaucracy is a benefit. Immense bureaucracies typically generate reams of standards and have people in positions of authority who demand compliance. In such a case, you can simply pull out volume 34, go to page 1,192 and photocopy it. Then, attach the page to a memo demanding the money you need to hire a consultant to come in and do it for you. You're started.

In a smaller organization — whether you're "lean and mean," decentralized, or just cheap — you have to try a different approach: Terror. That's right. You have to scare the bejeezus out of your management.

There are two favored approaches you can use. The first is the threat of a computer outage taking your company out of business. This should be effective, but surprisingly enough, many managers don't believe things would be that bad without computers. Some might even anticipate an improvement. The second is the threat of legal repercussions.

An interesting side-effect of the Foreign Corrupt Practices Act, which was designed to stop companies from giving prostitutes to foreign businessmen, was to make corporate officers personally responsible, and legally liable, for mismanagement. A foreseeable contingency for which there is no plan could be seen as mismanagement. Even in America.

Assuming one of these two methods works, which also assumes that at least one of your corporate officers shows up regularly enough to read his mail, you should be ready to start planning.

Manpower And Consultants

CONSULTANTS ARE GREAT TO have around. They'll do anything for money, even the boring stuff like contingency planning. Just be prepared to pay for it.

There are several firms that can help you develop contingency plans. Your best bet is to find one that has done it before

and has consultants who specialize in it. There's no sense paying somebody to learn on the job.

If you have the organizational discipline to go it alone, feel free. I generally would not recommend this approach unless you have a dedicated staff for the job. Contingency plans have a way of becoming secondary when something more important or fun to do comes along. Contingency plans aren't sexy and it's hard to get a promotion for doing one, though it's easy to get fired if you don't have one around when you need it.

Contingency plans have to be customized for every location in your organization. This means that everybody has to buy into the program and make local manpower available. You may have a headquarters filled with geniuses, but the local people know how they use their computer systems and what the potential exposures are.

Consultants don't substitute for user input. They just ask the right questions and coax the data out of your users. Make sure that the user community understands how much they are needed and the manpower commitment they will have to make.

Critical Applications

IT'S COMMON FOR ORGANIZATIONS to develop an all-or-nothing plan that counts on completely recovering an entire facility, system or network. The complexity of today's computer systems, the use of networked workstations and the sheer mass of equipment you have may make this approach infeasible. It may take care of the problem, but even if you can do it, it'll drive you crazy and might put you out of business, even if the disaster doesn't. It's more realistic to look at all the systems your company uses and then determine how much it would cost to have them go away.

[Routine Causes Of Disaster]

"Experience keeps a dear school, but fools will learn in no other." — *Benjamin Franklin*

It's amazing and frightening to think how little it takes to bring down a system. Some think computing disasters are only associated with large-scale natural disasters like the San Francisco earthquake or Hurricane Hugo. However, disasters also can result from power defaults, electrical fires, software upgrades or even sabotage.

Experts categorize the causes of disasters into four groups. The first and most obvious causes are fires, floods, wind damage, earthquakes and hurricanes. The second group includes vehicular accidents, explosions and hazardous material spills. The third category involves equipment failure in the computer center or end-user location, failure of communications lines or networks, or breakdown of electrical service and plumbing. Finally, disasters also can be caused by sabotage, employee or non-employee strikes, terrorism, boycotts, protests, and acts of government.

Although many organizations plan effectively for the first two categories, the last two often are ignored. Unfortunately, computer-related disasters usually occur as a result of the last two groups.

Consider, for example, how government regulations can ruin good intentions. Some organizations affected by a recent Wall Street area power blackout had emergency backup power for their data center. However, because the rest of their building didn't have backup power, the fire alarms wouldn't work and the local fire department couldn't allow occupancy. The data center was operable, but no one could enter the building to use it. This sort of situation can be avoided by recovery planning based on a thorough and realistic analysis of risks.

Investigate the possibility of large-scale natural disasters if your geographic area is susceptible to them, but don't overlook the smaller-scale risks that may be more likely to cause a problem. It's often the little things that will bring down computer operations. Here's a rundown of some less than spectacular, but altogether common crisis causers to bear in mind when planning for disaster:

- ***Accidents:*** Manufacturing and corporate centers are often located near major highways and railways. These centers can be affected by train or car wrecks or by chemical spills.
- ***Building Issues:*** Inspect the air conditioning and heating systems—redundancy is desirable. Be wary of leaking roofs. Determine if the building contains asbestos that may require removal or containment.
- ***Data Communications:*** Keep spare modems and multiplexors. Maintain a diagram of all communications, including any networks.
- ***Plumbing:*** Check for plumbing pipes running overhead or through the computer room walls. See that old sprinkler systems are properly drained.
- ***Power Problems:*** Besides the obvious risk of brownouts and blackouts, there can be power problems in the site or in the system. Proper maintenance and backup power sources can reduce these risks.
- ***Sabotage:*** Disgruntled employees can go to extremes. Computer room access should be restricted and monitored. Termination procedures should be strict and thorough.
- ***Security:*** Site security should include procedures to handle strikes, protests, building evacuation, bomb threats and uninvited guests.
- ***Software:*** Be aware that upgrading current applications or operating systems to new, untried versions can bring a system down. An alternate system may be needed until the upgrade is running properly.

We can all plan for a better future. That's easy. Recovery planning should deal with the unexpected, small-scale interruptions in operations, as well as major natural catastrophies. Practical planning should be focused on the everyday risks facing your organization rather than on the less-likely large-scale natural catastrophies. —*John Painter, Computer Solutions Inc., Orange, NJ.*

A prime consideration is the length of time involved in a systems outage and when the outage occurs. Some systems have to be online and available constantly. For instance, airline reservation systems and the transaction processing systems of banks and credit card companies have to be up all the time. Sales and budget forecasts or personnel systems are probably not as critical. They might be able to go away for a month or more before anyone notices. Most systems will fall somewhere in between.

You should sit down with each and every department and have them tell you what the real dollar costs of an outage would be for various lengths of time: four hours, one day, a week or a month. From this information you'll quickly see which systems have to be protected, and you'll get a sense of the scale of a recovery effort you will have to mount.

Risk Exposures

ONCE YOU KNOW HOW your application priorities stack up, you need to look at the kinds of things that could take them down. The risks you concentrate on will be determined by the critical importance and physical layout of your systems.

There's a tendency to think only about total outages. Computer room fires, floods, tornadoes and earthquakes are the exciting stuff. You might wind up getting creamed by something less exotic, so consider all options. Very time-sensitive systems can be seriously impaired by simple hardware problems. A network failure or a crashed drive can wreak havoc on an online transaction processing system. Less sensitive systems can sail through these without a problem.

LANs can be an exposure risk because of the amount of wiring and distribution equipment they need. A telephone closet fire or a piece of conduit that gets wasted by a forklift driver can cause you as much grief as a computer room fire. A piece of fiber optic cable that gets crunched could take your network down for a while. Even a security breach can qualify as a disaster if it screws up an online database. Consider every possible point of failure.

Even if your own facilities are resilient, think about how much you depend on the kindness of strangers. What do you think would happen to you if all of your telephone service went away? You probably remember reading something about the central office fire near Chicago in 1988. Some folks lost long distance service for weeks. What do you think something like that would do to that wide area network you're so proud of?

This brings up another point—don't just think about the computers. Computer systems are only part of the workplace.

What good are the computer systems you have if you lose the paper files or if people don't have an office to sit in any more? Look at the big picture, too. It's all part of disaster recovery.

Preventive Measures

HERE'S ANOTHER PLATITUDE: An ounce of prevention is worth a pound of cure. That means you should try to stop problems before they occur.

The first thing to do is to get yourself some protection. Put power conditioners on everything you have. Computers, modems and outside-the-building data communications lines should all have surge suppression devices on them. Nothing will ruin your day like a nice lightning strike.

Step two is getting fire-protection in your computer rooms. Right now, that means a Halon gas fire suppression system. Your insurance company may think it's fine to dump a few thousand gallons of water on burning computer equipment, but they don't have to get you up and running again, do they? Halon has three major advantages: You don't have to wait for a fire to get hot enough to melt a sprinkler head fuse before something gets done about it; it puts fires out almost instantly; and you don't have to mop it up.

The more environmentally aware may realize that Halon is a chlorofluorocarbon, and thus contributes to ozone depletion. Until something better comes along, you may have to shelve your concern, as proper as it may be. What you should do, however, is try to talk your local fire department out of making you do a full test dump of the system when you install it. The fire inspectors like to make sure that everything is working right, but blowing hundreds of pounds of Halon just for grins is a bit irresponsible (as well as expensive).

Redundancy Eases Recovery

IF, DESPITE ALL YOUR precautions, you still get nailed by the fates, having redundant systems or components could save your neck.

Redundancy is always a lovely idea, even if it can get a little pricey. If you have two of something, whatever it is, it doesn't matter so much if one of them blows up.

The price and difficulty of redundancy depends upon what you are trying to protect. Keeping extra modems, communications cards and the like is not too much of a problem. Protecting your network by routing additional cables and providing ways to bypass damaged sections of a building will require

more money and effort. The really tough stuff is providing full backup data centers and totally redundant wide area network capabilities. Like everything else, recovery planning has to be approached from a cost/benefit perspective.

If you want a recovery site, you can build and maintain your own or contract with another company to provide it to you. There are several companies that specialize in recovery planning and services. They can provide facilities, equipment and consulting to help you develop your plan.

Don't even think about a cooperative agreement with other companies in your area. It might sound like a good idea, because it's cheap, but it doesn't work. Such an agreement is hard to implement, almost impossible to test, and what kind of shape would you be in if you both got nailed by the same disaster?

It's vital that your recovery site be remote from your primary site. Widespread problems like floods, hurricanes and earthquakes can incapacitate a local recovery site as well as your own. For that matter, make sure that the recovery site you use doesn't have too many clients from your area. You don't all want to be showing up at the same time.

Duplicating your wide area network lines can be important. As distributed systems become more important, losing a data communications line is like losing whole computer systems. Duplicating lines also can be a real pain. You're usually at the mercy of the local Bell. If you can swing it, you should get redundant lines from different switching stations. This may be easier said than done, and the phone company will bleed you for it's extra effort. For that matter, they may not even be able to do it. If your company likes to put plants out in the boonies where the air is clean and the labor is loyal and cheap, there is probably only one switching station anyway.

You also could duplicate your communications lines with microwave or satellite links, but that's a big bucks operation. If you need that kind of stuff, and you're reading this article for advice, you're in big trouble already.

If line redundancy is out of the question, make sure your networked system design isn't your Achilles' heel. Your systems have to be resilient enough to survive a network outage. Make certain that dropping a line or two isn't going to be fatal. If your network is critical, make sure your recovery site has the necessary communications facilities and be ready to go there when your network croaks.

A final thing to consider is getting replacement equipment in the aftermath of a disaster. Although most computer companies have replacement policies that can get you replacement equipment quickly, maybe even in a matter of days, make sure that you have all of your sources and the necessary paperwork in order. They aren't going to give you the stuff for free. It

might be a good idea to have some purchase orders pre-executed and ready to go. It will minimize configuration mistakes and speed up your return to normal operations.

The Finishing Touches

WHEN YOU PUT TOGETHER your recovery plans, don't forget about the lousy little details. These may make or break your efforts.

Make sure that everybody involved in the recovery has copies of the sections of the plan that concern them. More than one person should be trained to execute the plan when it's needed. Your recovery team may well be personally affected by a disaster, and key personnel may be unavailable in the case of an emergency.

Organize your notification, travel and lodging procedures in advance. Once you get your personnel to a recovery site, they will eventually have to sleep and eat.

You should also keep stocks of necessary printed forms and supplies readily available. These can be a problem to get on very short notice.

Last, but absolutely not least, test your plan. It isn't really complete until you've tested it thoroughly. And if you want to be adventurous, do it realistically. You might think it nasty to have a test at 3 a.m. on Tuesday, but if your plan works then, it'll work anytime. If you want to have some real fun, run your test at lunch time on a Friday.

You'll have to determine how realistic you can afford to get without costing your company more money than you can explain, but don't wimp out on your test. If you don't poke and prod it thoroughly, you won't find the holes until it's too late.

As they say, it ain't over 'til the fat lady screams for mercy, or something like that. In the recovery business, the plan isn't done until you use it. If you've gone this far, don't just put your plan on the shelf and forget about it. To be meaningful, your recovery plan has to be kept up-to-date with your changing hardware, software, networks and organization. Review it periodically to make sure it's aging well. Test it. Change it.

All in all, disaster planning is a lot of work for something you will probably never have to use, but don't let that mislead you. It may be the most valuable thing you'll ever do.—*Gordon McLachlan is a consultant with National Tech Team in Dearborn, MI.*

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INTELLIGENT DIAGNOSIS

Using Expert Systems Is Just What The CE Ordered

[BY RON LEVINE]

In the 1980s, artificial intelligence (AI) was oversold as a field service solution. AI, it was thought, could keep our systems running forever without much need for technicians. Mushrooming demand for trained technical service people had created an industry-wide shortage of qualified personnel, and AI was touted as a way out of the crisis. Many people believed it could create a utopian service environment that required little or no human intervention.

Alas, AI was misunderstood. In reality it was not a magical solution to maintenance problems, and it couldn't replace an experienced service technician. Far from it. It had problems of its own: It was expensive and time consuming to implement, and it required dedicated hardware and specialized engineers with knowledge of how to build an AI system. Locating engineers who understood field service applications proved almost impossible. The AI systems that were implemented failed to live up to either the developers' promises or the users' expectations.

Today, however, AI in field service is making a comeback. This is not to say that those unrealistic pitches of the past have suddenly come true, but rather that companies are taking a more practical and reasonable approach to using AI. Developers and users alike now have a better understanding of what artificial intelligence can (and can't) do, and with user expectations properly lowered, AI is in the limelight again.

Technology breakthroughs also have contributed to AI's renaissance in the field service business. Increased memory, processing power, and

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storage capacities for workstations and PCs have made AI less expensive and many smaller service firms and self-maintainers now can afford to get involved.

What Is An Expert System?

IN KEEPING WITH ITS NEW, toned-down image, AI is now generally referred to as "expert systems." An expert system is a "tool" designed to allow companies to use their people and data more effectively. Expert system software turns specialized knowledge and expertise into company-wide assets available to all personnel. Like any tool, it aids not replaces people.

In field service, an expert system can allow a maintenance vendor to computerize the troubleshooting knowledge and experience of its best field engineers, technicians, and technical support people. This information can then be made available to all personnel at all times. It's much like having your best expert available everywhere, around the clock.

Expert system software turns specialized knowledge and expertise into company-wide assets available to all personnel. Like any tool, it aids not replaces people.

Because expert systems, unlike standard database programs, can mimic human reasoning and complex troubleshooting procedures, they can handle previously undefined problems and "learn" from each endeavor. This unique combination of stored expertise and "learning" ability is its inherent value. The more an expert system is used, the more information it gathers and stores about its application. As new data becomes available, the expert system modifies its own operation to make use of the new information. Less-experienced field personnel can draw on the system's increasing knowledge to troubleshoot like experts.

Let's look at a typical scenario in which an expert system could be used. Suppose a CE (customer engineer) arrives at a site and is confronted with either a problem he never has seen before or with unfamiliar equipment. By combining a laptop or desktop computer and an expert system package, he can receive hand-holding guidance without outside assistance or a product manual. With some expert system techniques, the CE enters a description of the symptoms, the system then suggests procedures, diagnostics, corrective action and how to verify that the fault has been resolved. In other variations, a question and answer session between the CE and the system provides the fault-finding solution. In both cases, the system leads the user step-by-step through the troubleshooting process to problem solution and checkout.

Another typical use of current AI technology is to place the expert system online. When it has access to the working system, it can monitor the system and indicate actual or potential problem areas. It can also evaluate troubleshooting results and suggest corrective action from a remote location.

How Expert Systems Work

MOST EXPERT SYSTEMS IN field service use today employ a combination AI and database lookup technology. In a 100 percent AI program, the computer-based troubleshooting procedure would follow the same reasoning process that an experienced technician would use to approach and solve a problem. The expert system would, like its human counterpart, learn from each troubleshooting situation it encountered.

Expert systems used in field service combine this approach with a more conventional database "lookup" feature created via inputs from experienced CEs. The database is continuously expanded as additional information is collected during program usage. For this reason, today's systems aren't considered true AI programs, but rather expert systems that receive at least some intelligent input from other sources.

There are several expert system methodologies in use today; the most common are rule-based and model-based systems.

Rule-based systems usually require a specialist (knowledge engineer) to program the expert system. This engineer must work with the company's product specialists, technical support staff, and CEs to translate their field experience and knowledge into the system's troubleshooting rules. A rule-based expert system works by compiling detailed knowledge of how a product can fail. Adding and changing data in the knowledge-base becomes harder and harder as system complexity grows. Therefore, the knowledge-acquisition phase of the project is all-important.

Model-based systems can usually be programmed (i.e., have data entered) directly by your technicians, support staff and other product specialists. These systems work by detailing how a product functions rather than how it fails. In a model-based implementation, the product is described in much the same way it would be in a technical training class. A complete knowledge base is not required at the start; it can be augmented and refined progressively, making model-based implementations the ideal method for start-up service on new products.

No matter which implementation (rule- or model-based) is used, expert systems usually are divided into three distinct parts, the inference engine, knowledge base and user interface.

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Expert systems and other AI-type packages aren't a cure-all for every service and maintenance problem, but they are an important tool in the service/support arsenal.

The inference engine is the "reasoning" module. It handles information collection pertaining to a problem or fault condition. It then compares the collected data against the knowledge-base data to decide on a course of action. The information is gathered either from the user's inputs (via the interface module) or automatically, if the expert system is online or embedded into the computer system.

The knowledge base contains the accumulated knowledge and expertise of the field service company's best troubleshooting professionals. Data on how they approach problems, make decisions, and troubleshoot faults are converted into rules and procedures. A database "lookup" function may be included; it contains all previously detected faults and their solutions.

The interface module is the user's communication link with the inference engine. Through it, the user provides data about the problem and receives advice from the expert system. Today, many expert systems provide for integration with existing call logging and reporting systems; they permit the CE to open and close calls, report all call activity, and generate the associated "paper work" over this interface module.

Expert systems are either built in-house (custom made and written from scratch) or purchased as shells. Shells include a preprogrammed inference engine, user interface, and the framework for the knowledge base module. The purchaser is required to build his specific knowledge base through either direct data entry or the hiring of a knowledge engineer. The availability of shells has brought cost, time and risk factors down to a level that makes it possible for smaller service firms and self-maintainers to afford expert systems technology.

Some Field Service Products Using AI

HEWLETT-PACKARD'S PREDICTIVE Support XL is a software package that monitors system operations. It resides on RISC-based HP 3000s running MPE XL, and it automatically alerts operators and HP technicians to potential hardware problems before they impact the system or cause an unexpected failure. Once loaded onto a system, HP Predictive Support XL software reads and analyzes event data to detect problems within the computer system's I/O, processor and memory devices.

Based on rule sets and thresholds developed through historical data, the software alerts both the customer and the HP Response Center about potential problems. These messages are reviewed by a Response Center engineer who analyzes the data and either resolves the problem remotely or dispatches a customer engineer to the site.

When and how often to run this monitoring software is left to the customer's discretion. If the predictive software is run unattended after-hours, these alert messages are usually sent to a printer. If run during the day, the messages can be displayed on the operator console. The customer also makes the decision to either have the software automatically notify an HP Response Center of impending problems or to place the call themselves.

HP Predictive Support XL software periodically adjusts the rules that identify undesirable trends. Thresholds and rules are set at the response centers where center personnel make changes to reflect new edicts or new equipment. New, updated information is automatically down-loaded when the user's system is next in contact with a response center.

HP Predictive Support XL uses a menu-driven interface for ease of configuration and administration. This package is provided without charge to all customers purchasing hardware-support contracts for HP 3000 computers using MPE XL.

HP Remote Watch, for the 9000 Series 300 and 400 HP-UX workstations is the latest "smart" monitoring tool rolled out by Hewlett-Packard. This software package monitors the configuration of a workstation cluster and archives the collected data. By comparing today's data against yesterday's, it tracks configuration changes.

Although the HP Remote Watch does not have inherent intelligence built-in, it does build a knowledge-base of the system configuration status and draws on this knowledge-base to solve configuration-related problems. (It's believed that configuration changes are the cause of most cluster errors. One user making a configuration change can harm the whole cluster. This program tracks these changes.) Errors are reported to the system administrator. As of yet, there is no automatic link-up to the HP Response Centers.

In a related development, Hewlett-Packard and IntelliCorp have entered an agreement in which HP will purchase multiple copies of IntelliCorp's KAPPA PC software. KAPPA PC is an application development environment for DOS-based computers that features object-oriented programming, links to leading databases and spreadsheets, and contains a rule-based reasoning module. HP will use KAPPA PC to develop and deploy strategic applications to locations throughout the world. Details about the planned applications were not disclosed at press time.

Rosh Intelligent Systems has created one of the first off-the-

shelf expert systems for the service industry. Called Computer Aided Intelligent Service (CAIS), it allows a service organization to computerize its troubleshooting expertise and deliver that knowledge wherever needed. CAIS guides service technicians or equipment operators through preventive maintenance and troubleshooting techniques.

Modules are included for troubleshooting, call logging and closing, and automatic product-service manual generation. CAIS' advisor option tells the CE what tests to run and how to run them, displays graphics detailing test connection points and interprets test results. It leads the CE step-by-step from fault isolation to solution. At any point in the troubleshooting process, the CE can accept the system's advice, reject it, or return to it later. This permits CAIS to be used by all levels of field technicians. They can either follow its step-by-step recommendations, or selectively ask for help.

After the problem resolution phase, the CAIS log generates the required paperwork and management report. Previously unlisted symptoms or actions taken are added to the database.

Rosh is (first quarter of 1991) introducing a new AI tool called Show-CAIS. It enables a service provider to develop a self-maintenance and operations support environment for his customers. The product equips operators with expert system-based troubleshooting guidance, online access to equipment documentation and a systematic approach to preventive maintenance activities. Show-CAIS features: an electronic calendar that alerts the user to scheduled procedures and records all activities completed, access to expert-system troubleshooting guidance through Brief-CAIS that leads the user step-by-step through a diagnosis and repair process, and automatic logging and tracking of all maintenance activity.

Answer Computer's Apriori is another AI-like software tool for the field service environment. Apriori logs and tracks incoming problem reports and also manages the collection of information needed to support a commercial hardware or software product. It manipulates and retrieves this information in response to customer questions. Apriori is not a true AI/expert-system tool, but rather defined as a device for deductive problem-solving based on previous experience.

Apriori provides a set of problem-solving tools, including diagnostic search, symptom search, and related-document search facilities that enable support staff to match customer problems with solutions. It utilizes an experience-based learning engine — its learning capabilities are inherent in its structure. Because the system learns with use, reprogramming is not required as new problems arise. Nor, does it require an up front investment in knowledge engineering. Apriori recognizes which problems are most frequent and reorganizes its data structure automatically moving the common problems to the front, thus improving MTTR efficiency by reducing the time it takes to solve repeat problems.

In addition to information on the supported product, Apriori also keeps track of general customer information, such as hardware and software configurations, authorized account names, recent support activity, and all interactions between the customer and the support vendor. A reporting capability summarizes system usage.

Here's a typical scenario in which Apriori would be used: A customer phones the vendor's support facility and describes the problem. If the problem has been answered before, Apriori can quickly lead the support person to its solution. If the problem is new, the system gathers the required information and automatically forwards the report to the appropriate member of the support staff for analysis and resolution. The problem description, symptoms and solution are then made a permanent part of the database. This way, questions are researched and solved only once. Apriori runs on Apollo workstations, and can be ported to other platforms through X Windows.

In The Long Run...

TODAY'S TECHNICAL BREAKTHROUGHS allow expert systems to be implemented with reduced cost, time and risk. They can reside on workstations and PCs, be ported to various platforms, and integrated into existing service management software. User expectations of what an AI expert system can do have been brought down to the realm of reality. Together, these events have given expert systems the ability to make a positive impact on the service endeavor.

Expert systems and other AI-type packages aren't a cure-all for every service and maintenance problem, but they are an important tool in the service/support arsenal.

As these systems become more commonplace in the field, both service vendors and their customers will benefit. Less-experienced technicians will be able to complete complex repairs on the first service call. Not only will actual time-to-repair be reduced, but the number of "no problem found" service calls also will decline. By recognizing the true role of AI, and understanding its limitations, field service can make real people—users, operator and technicians—more productive.

Squeeze PLAY

Integrating Voice, Fax And Data Transmission Can Shrink Your Telecommunications Costs

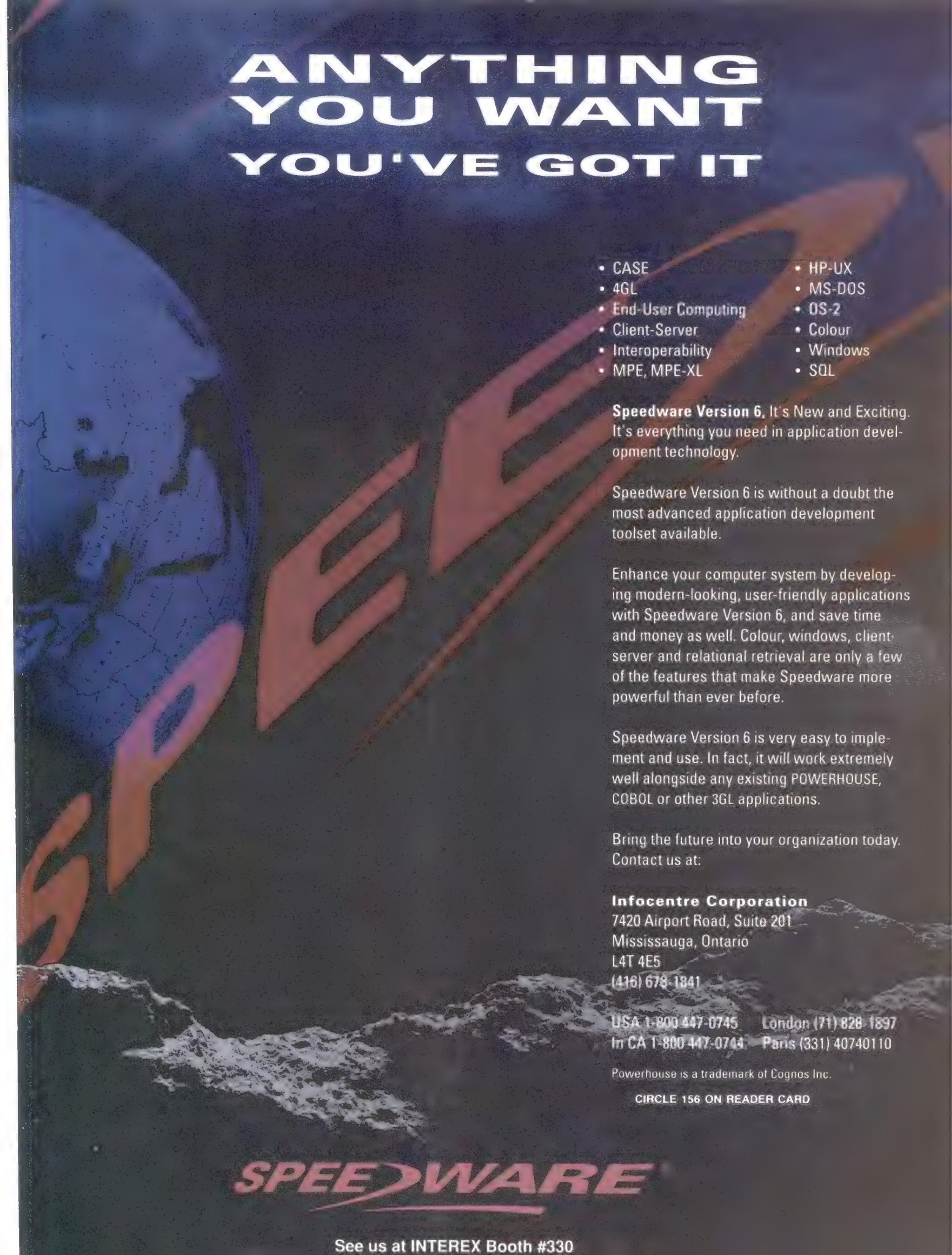
Mention wide area voice, fax and data integration to a colleague and undoubtedly they'll think of expensive line charges for a T1 transmission line and lots of voice and data running simultaneously between mainframe environments.

It's time to change that perspective. The integration of remote voice (toll calls, tie-lines), fax, and remote data (terminals, LAN) does *not* require T1 lines (1.5 Mbps) or mainframe environments any longer. As technology matures, and the sub-T1 transmission options grow, companies using minicomputers now can combine voice, fax and data at lower than T1 levels, using fractional T1, 56/64 Kbps and even 9.6 Kbps lines.

These developments have two results: Cost-savings in data, voice and fax transmission charges and a new way for HP users to approach remote connectivity. The rules of wide area networking (WAN) are changing, and the net result will be applications that require integrated voice, fax and data solutions.

You've probably heard many telecommunications buzzwords in recent months (see GLOSSARY) and may be unsure of what they all mean. You also may be unaware of how to use these new data/voice/fax integrated capabilities to your advantage. You even may wonder why you would ever want to integrate voice, fax and data if you send them separately now. One simple reason is that the arguments for combining them are becoming too compelling to ignore.

[BY KEN GUY]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The first consideration regarding sub-T1 data/voice integration is: Why has the high-speed T1 method been used almost exclusively for integration up to this point? The key reason is that historically, voice conversations have been digitized at 64 Kbps. In the early 1960s, when AT&T set up its first T1 line, it grouped 24 voice channels at 64 Kbps per channel (24 x 64,000 bps = 1.5 Mbps) to arrive at T1 (see *Figure 1*).

The problem has been that, until now, you needed that full T1 bandwidth to integrate voice and data, and that's an expensive proposition for most small- to medium-sized businesses. The cost of T1 from Chicago to New York, for example, is about $9,000 per month, compared to about $700 per month for an analog line (19.2 Kbps and below).

Now, however, two major developments have emerged to alter the concept of voice and data integration over WANS.

Compression And Multiplexing

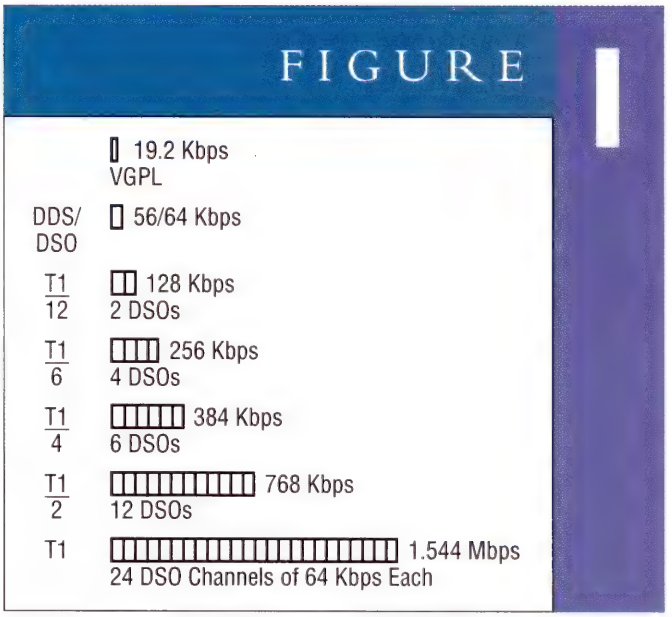
THE FIRST MAJOR DEVELOPMENT permitting voice/data/fax integration over reduced bandwidths involves the compression of speech and data and improved multiplexing techniques.

Speech compression techniques rely on high-powered digital signal processors (DSPs), originally developed by the U.S. Army for voice encryption security needs. In the past five years, the industry has experienced growing DSP power at declining costs. The $10 per mips costs of 1985 are closer to $1 per mips today. This has made speech compression an affordable technology for vendors and customers. Advances in speech compression algorithms — the software that digitizes the voice signal — have allowed voice signals to be compressed down to 6.4 Kbps, just 10 percent of the 64 Kbps bit rate.

Because fax traffic also uses the voice network (some fax machines have digital interfaces, but most don't), it's important that speech compression techniques allow for fax traffic. It is also vital that the speed of fax transmission — typically 4800 bps or 9600 bps — not be compromised by speech compression. The best way to do this is for the speech compression technology to detect that the incoming audio signal is fax and automatically run fax demodulation software instead of speech compression code. This converts the analog fax signal back into its original digital format, preserving original digital speed.

Similar advances in data compression technology through higher performing microprocessors have reduced the bandwidth by 50 percent to 75 percent. This frees up additional bandwidth for more data, voice and fax traffic. There is, however, a caveat regarding data compression: It results in increased delay.

In fact, most data compression techniques add considerable delay to end-to-end data transmission, providing poor results in applications that require host echo or low synchronous pole-select time outs. It's important, therefore, to make sure that your communications equipment uses data compression techniques that accommodate these low delay situations.



T1, FT1 And DSO/DDS bandwidths compared.

Let's use a typical T1 application to demonstrate how speech and data compression works. Suppose you have a T1 line with 10 voice circuits and 10 data circuits. Voice circuits could be used to carry fax as well. The voice circuits consume 64 Kbps. The data circuits typically consume 9.6 Kbps or 19.2 Kbps. The total bandwidth is around 800 Kbps, or one-half of a T1.

In this example, voice/fax transmissions take up roughly 80 percent of the total bandwidth being utilized. If you could reduce the main bandwidth consumer (voice/fax) by 90 percent and reduce your data portion by 50 to 75 percent through data compression, you could reduce your transmission needs far below a T1/2 line, to around 128 Kbps, just 1/12 of a T1.

Bandwidth savings can be further improved by the type of multiplexor used. Time division multiplexors allocate a fixed channel of the bandwidth to each line consumer. Therefore, there's no bandwidth sharing. That's not the most efficient technique for speech traffic where conversations typically use only 40 percent of the bandwidth, because of inherent pauses when one end is listening to the other. Data transactions typically use even less, as little as 10 percent of the allocated bandwidth.

Packet multiplexing of voice, fax and data allocates bandwidth on an as needed basis and therefore can provide anywhere from a 2-to-1 to a 16-to-1 advantage over time division multiplexing. However, allocation of voice bandwidth must be immediate or speech delays occur. Therefore, packet multiplexing of voice transmissions must use special protocols, much like the new very low delay fast packet protocols, to prevent delays or voice "jitter." By fast packet multiplexing the voice, fax and data circuits of the earlier example, the bandwidth needed could be reduced to just one 64 Kbps line.

Multiplexors have traditionally allowed minicomputer en-

vironments to control remote access of data efficiently and effectively. This new breed of voice/fax/data fast packet multiplexors adds the traditional efficiencies of packet multiplexing to both the data and voice worlds.

New 56/64 Kbps Economies

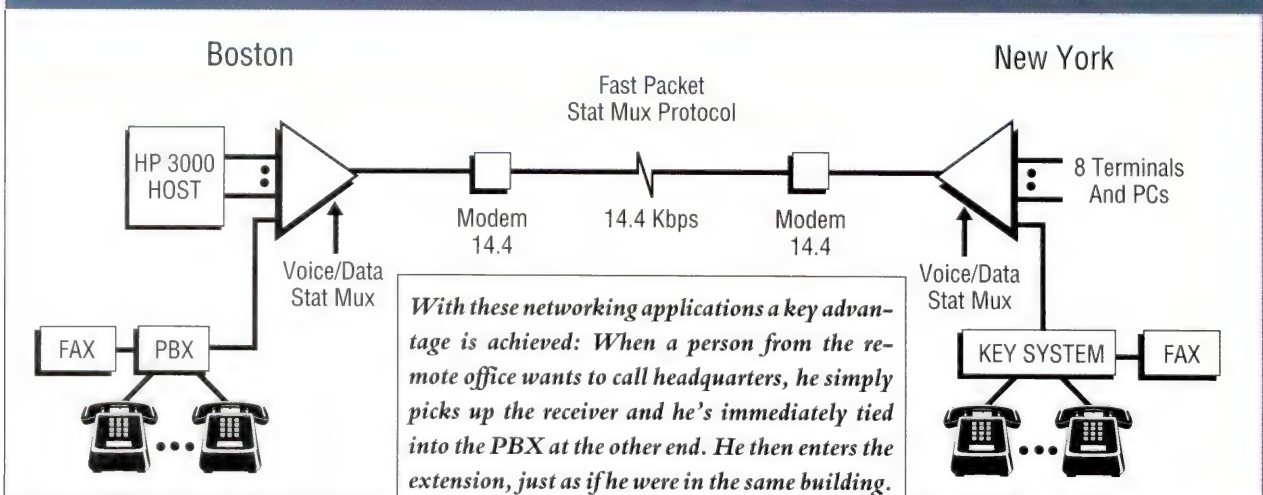
BEGINNING IN THE SUMMER of 1989, the long distance companies (known as the interexchange carriers or IXCs) proceeded to significantly reduce the cost for a single 56/64 Kbps line.

By 1990, you could get a 56/64 Kbps line from an IXC for what an old 19.2 Kbps (analog) line used to cost. AT&T's single 56/64 Kbps service, called Accunet Spectrum of Digital Services (ASDS), is now less than one-third the price of AT&T's older DDS (Dataphone Digital Service) 56 Kbps line option. MCI, Sprint and other long distance services now have similarly low-priced offerings.

Services in the 56/64 Kbps area have become attractive as the interexchange carriers have reduced digital line costs for the IXC portion of the connection. However, not all of the local telephone companies (Local Exchange Carriers, or LECs) have followed the IXCs in providing affordable 56/64 Kbps services. Of the seven RBHCs and GTE, Pacific Bell's Advanced Digital Network (ADN), New England Telephone's DDS-II, Nynex's DDS-II, and Ameritech's Optinet now offer low cost 56 Kbps service. ADN debuted in early 1989, DDS-II in mid 1990, Optinet in the fall of 1990. Other LECs are in various stages of developing low-cost 56/64 Kbps services.

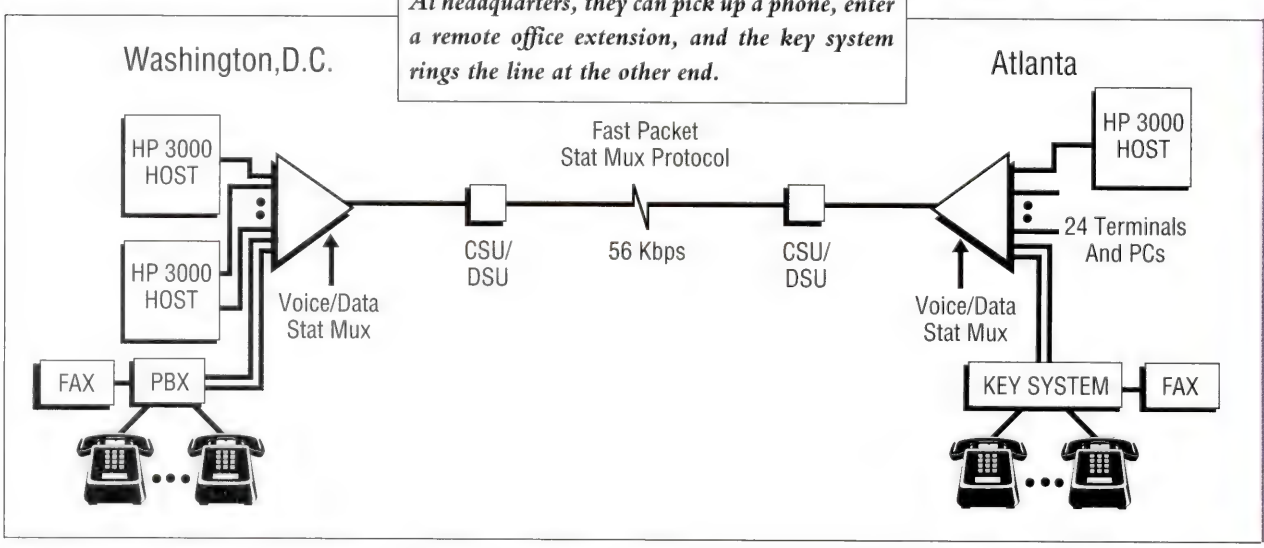
The bottom line is that the end-to-end cost of a 56/64 Kbps line is now only 1 1/2 to two times the cost of an analog (up

FIGURE 2



With these networking applications a key advantage is achieved: When a person from the remote office wants to call headquarters, he simply picks up the receiver and he's immediately tied into the PBX at the other end. He then enters the extension, just as if he were in the same building. At headquarters, they can pick up a phone, enter a remote office extension, and the key system rings the line at the other end.

FIGURE 3



to 19.2 Kbps) line. In fact, even though T1 prices have also come down, 56 Kbps line rates have fallen even faster. The cost of 56 Kbps has now come down to 6 to 12 percent of the cost of a T1 line, from 25 percent earlier. Moreover, 56K "modems," really CSU/DSUs, cost much less than 19.2 Kbps modems.

Although the new lower cost 56/64K lines are an attractive development, the majority of users still use analog (19.2 Kbps and below) lines. In fact, a compilation of projections by industry researchers shows that by 1993, the number of installed circuits in the 19.2 Kbps and below range will still outnumber the 56K, fractional T1 and T1 circuits by a ratio of almost 9-to-1.

The good news is that the same compression technology and fast packet multiplexing protocols are used to integrate data, voice, and fax over analog lines. Multiple remote speech conversations and data transactions can be multiplexed onto one analog line. At 19.2 Kbps, it's possible to combine two voice/fax circuits and 12 asynchronous data circuits over the same leased analog line. In fact, even a 9.6 Kbps line can support eight data users and one voice/fax circuit.

The Savings From Integration

THE MOST COMPELLING ARGUMENT in favor of combining voice, fax and data over WANS is, of course, economic. Because of the three major developments discussed earlier, businesses can add voice to their data networks, have the equipment pay for itself in a matter of months and then save hundreds of dollars on phone bills thereafter.

Let's use two simple scenarios to prove the point. The first example (*Figure 2*) is a Boston to New York application with a leased analog line using 14.4 Kbps modems. The remote office

[TELECOM BUZZWORDS: A GLOSSARY]

ADPCM — Adaptive Differential Pulse Code Modulation. Speech compression technique used to convert analog speech to digital format at 32 Kbps. ADPCM can reliably pass fax and modem traffic at 4.8 Kbps.

Aggregate Rate — Sum of channel data rates for a given application.

Analog Line — A voice-grade private line (VGPL) at 19.2 Kbps or less. The line is analog between the customer's site and the central office, and digital between COs.

Broad Band — A communications channel having a bandwidth greater than a voice-grade channel and potentially capable of much higher rates.

CO — Central Office. A telephone company switching center. COs are usually within two to three miles of the customer's facilities. All service within 2 to 10 mile radius is provided by a CO.

CSU/DSU - Channel Service Unit/Data Service Unit. Operates as interface to DDS lines (see DDS entry).

Data Rate, Data Signaling Rate —This is the measurement of how quickly data is transmitted, expressed in bps (bits-per-second).

DDS — Dataphone Digital Services. AT&T's older digital service, the precursor to ASDS. Costs are significantly higher than ASDS.

DS0,DS1 — Pronounced "D-S Zero" and "D-S One," these are units of transmission bandwidth. DS1 is the T1 connection, operating at 1.544 Mbps. A single DS0 represents 64 Kbps. Tweny-four DS0s (24x64 Kbps) equal one DS1.

Fast Packet — A remote communications technique that transports a dynamically varying combination of voice, fax asynchronous and synchronous data, video and LAN traffic. Fast packet techniques provide fast, predictable delivery of time-sensitive information.

Fractional T1 — Services such as AT&T's ASDS, where T1 is divided into fractions allowing for more affordable networking. The entry point of fractional T1 services is at 112 to 128 Kbps on up to 672 to 768 Kbps on the high end.

LATA — Local Access Transport Area. A LATA is a geographic region (usually 25-75 miles) where all regulated services to the customer premises are offered by the LEC.

Leased Line — Dedicated phone line, available 24 hours per day. Customers pay fixed rate by the month, independent of usage.

LEC — Local Exchange Carrier. Phone companies operating within LATAs (see below), e.g., Pacific Bell, Illinois Bell, Bell Atlantic, etc.

MAN — Metropolitan Area Network. Usually a very high-speed, fiber optic network (operating at 100 Mbps or more) designed to interconnect LANs located in facilities several miles apart.

Multiplexing — The process of combining multiple channels over one composite circuit.

POP — Point-of-Presence. A place where a long distance carrier (IXC) exists within a LATA. Each IXC can have multiple POPs within one LATA. All long distance phone connections go through the POP's of the designated IXC.

Statistical Multiplexing — The multiplexing technique that dynamically allocates bandwidth to active data channels, resulting in very efficient bandwidth utilization.

Time Division Multiplexing (TDM) — The multiplexing technique that apportions the time available on its composite link between its channels, interleaving data for successful channels. This technique is not nearly as efficient as statistical multiplexing because it does not make unused bandwidth available to active channels.

T1 — Communication line operating at speeds of 1.544 Mbps.

T3 — High speed 45 Mbps communication lines with the capacity of 28 T1 channels.

Wideband — Any line with bandwidth of more than 19.2 Kbps, usually 56/64 Kbps and up. This term changes meaning as higher speeds becomes available.

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in New York has a multiplexing requirement for eight terminal users that need to access an HP host computer in Boston. An average of 80 minutes of dial-up voice and fax toll calls between the two offices takes place every day. Assuming an 18 cents per minute toll rate, toll calls between the two sites run $330 per month. Because adding a voice/fax capability to this network on both ends costs about $3,000, the payback period is just nine months, with $330 a month saved in toll costs thereafter.

Greater phone traffic and higher rates would result in an even quicker payback period. This scenario is not uncommon of many remote applications; in fact, two to three hours of daily toll call traffic between a remote site and headquarters is not unusual for many businesses.

In scenario number two, (*Figure 3*), a Washington, D.C.-based office is connected to an Atlanta field office by a 56 Kbps leased line. In this application, there are 24 users in the remote Atlanta office. A host-to-host transfer requiring a 19.2 Kbps synchronous port is part of this example. The two offices combine for three hours of voice/fax traffic a day at toll rates of 16 cents per minute for a monthly toll bill of $660. By adding two voice/fax circuits at an equipment cost of $5,000, the toll call savings allows the equipment to pay for itself in about eight months. The company saves $660 per month from then on.

Practical data/voice/fax applications like these are changing the way businesses consider purchasing new communications equipment. The advances in data and speech compression technologies and fast packet multiplexing have come together to change the rules for WAN voice and data integration: The user should now always expect to combine his voice, fax and data traffic on all remote connections. The economy of this new voice/fax/data combination is now so compelling that as little as 60 minutes of combined toll voice/fax traffic per day provides a payback in less than one year. With the availability of reduced rates on high-speed services, the wide-area networking rules have changed even more and the integration of voice, fax and data at every WAN level — 9.6 Kbps to 19.2 Kbps to 56 Kbps — offers the best of both worlds on one efficient, economical network.—*Ken Guy is vice president of corporate strategy and business development at MICOM Communications Corp., Simi Valley, CA.*

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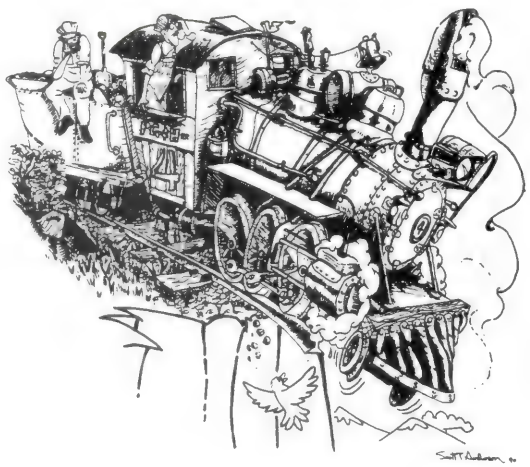

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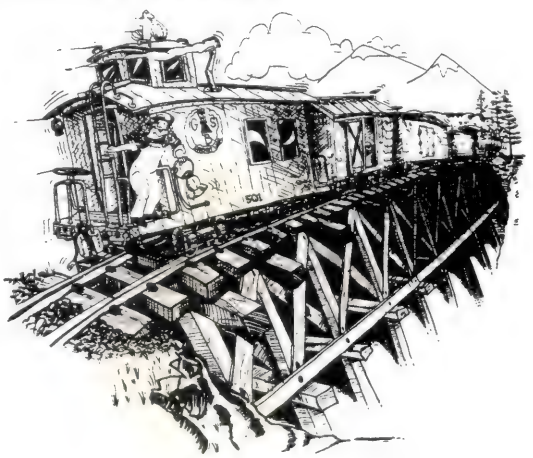

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The Password Is...

Today's Hackers Are Too Smart For This Game

[BY BILL SHARP]

A chief problem of computer security is understanding the meaning of the term. There's no such thing as a "secure" computer or computer data. Let's face it, security is relative.

Forget about computers for a moment and think about your home or car. Can you make them secure in an absolute sense? Not likely. When you lock your car and put it in the garage, or when you lock the house and leave a light on, all you're doing is making a theft or break-in more difficult or risky for the bad guys. In essence, you're buying time — time the majority of wrongdoers are disinclined to spend. Given time, there's no lock they can't pick or device they can't circumvent.

Computer security is the same. By setting up well-planned security measures, you make theft of information or dollars from your company's system a pain in the neck. By not tak

There must be something better than the patch panel to switch users between systems...

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ing steps to establish a security system, you create not only an opportunity, but a severe temptation. It's not unlike the person who parks a car on the street, leaves it unlocked with the key in the ignition — maybe even with the motor running — and then acts outraged when somebody accepts the offer.

Sure, you trust everybody in your office, and the computer system only has a couple of hundred users on it anyway. What's the big deal?

The Big Deal

THE NATIONAL COMPUTER Crime Lab in Los Angeles made an attempt to quantify the extent of computer crime. They produced an estimate of $500 million per year lost to U.S. companies. According to some experts, that number may be conservative.

In a recently published book, *Computer Ethics: Cautionary Tales and Ethical Dilemmas in Computing*, authors Tom Forester and Perry Morrison reckon that computer crime costs each of the top 300 U.S. businesses $2 to $10 million per year. That works out to $600 million to $3 billion per year for just the 300 largest companies, the ones best equipped to fight back.

Let's assume that the loss for those companies actually totals $1 billion, a number many would consider too low. That works out to an average loss of $3.3 million for each of our top companies. Now ask the head of your firm if he's willing to ignore a multimillion dollar loss each year, money that might otherwise make the company stronger, or give a lot of hard workers a raise. Forester and Morrison note that a Cleveland accounting firm estimates losses for U.S. firms at $3 to $5 billion per year, based on a survey of 240 firms. Clearly, the numbers are large, and growing apace as computers proliferate.

Illegal Video Games And Electronic Burglars

THERE ARE PROBABLY AS many kinds of computer crime as there are crafty minds to devise them, but they tend to fall into a few categories. All of them involve the use of computers to access or manipulate information. In some cases, the theft is of information itself, which may be left in place, undisturbed. More spectacular crimes involve using computers to divert goods or money to illicit locations or accounts. All these crimes are typically perpetrated by those with inside information, authorized users taking illegal actions.

Unauthorized users, as everybody nowadays knows, are called hackers. They may break into a system just for the kick of having done it—not unlike racking up a big score on a tough video game, except that it happens to be illegal. More destructive forms of hacking may involve blackmail or sabotage.

Computer crime slang changes and expands constantly as new treacheries are invented and colorful new names are applied. (See "Computer Slang" for some definitions of computer crime terms you may come across.) In the end, though, the crimes with the least interesting names seem to be doing the most damage. Credit card theft often involves computers, particularly in gaining access to codes. Automated teller machines (ATMs) may have improved customer ease of use but have also created new avenues for computer crime. Electronic funds transfer (EFT), however, probably receives top honors for dollar losses. Some criminals who slipped up and got caught were in the process of moving millions, sometimes internationally.

The most disturbing facet is that many of these crimes have been discovered by accident. And, it's a reasonable assumption that significant EFT crime goes undetected. Some estimates place detected computer crime at less than one percent of the total. In cases where the criminal has been skillful, proving guilt can be extremely difficult.

Speaking before the National Computer Security Conference last October, U.S. Representative Robert G. Torricelli expressed concern about the state of computer security even within the federal government. A full year after federal agencies produced their own computer security plans, he said, "Only 38 percent of the federal agencies' planned controls had been implemented."

Despite the fact that large computer systems are the ones most likely to contain sensitive data needing protection, Forester and Morrison report that, as of 1988, only about 35 percent of IBM mainframes across the U.S. had security provisions in place.

Security Is No Longer An Option

"WHAT WE'RE LOOKING at is that computer security is becoming more and more of a requirement and less of an option," says Jim Schindler, HP's Information Security program manager. "Technology is a major contributing factor in bringing about the computer revolution. Along with that technology comes some problems previously unaddressed."

Before the computer revolution, you could take the records and holdings for a vast financial empire, stuff them in a large vault with an armed guard in front of it, and consider them safe for the night. Today, those same records are tucked into a large computer that's networked with many stations in the building and, perhaps, across the nation or around the world. Against a skilled hacker with inside information working from a remote site, that armed guard is worse than useless; he provides an illusion of safety where none may exist.

Schindler reminds us that every five years, the inexorable onward march of computer technology places the power of what used to be considered a mainframe computer on the top of your desk. "As we bring more and more technology out into

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the office and the home environment, you begin to bring in networking. And, once you get networking, you have exchange of information in both directions," he says. The same capabilities that allow you to download a set of encyclopedias into the privacy of your own home could help you bust the Bank of Bloomfield.

The only defense against high technology is higher technology. You need to put an electronic lock on your computer car and slip it into the garage at night.

Elements Of Security

SCHINDLER SAYS THE electronic lock called computer security has three components: confidentiality, integrity and availability. Confidentiality is a measure of your data's accessibility. How protected is the data from access by others? Integrity is a measure of how secure your data is if someone gets access to it. Is the data in code, and how good is that code? Schindler compares confidentiality to parking your car in a garage and integrity to locking the car even though it's in the garage.

Confidentiality is an area that's developing well, but U.S. commercial vendors are having trouble with data integrity — thanks to government regulations. Data coding and encryption fall into this realm, both of which immediately bring to bear a host of export restrictions. According to Schindler, these restrict anything down to the level of a Buck Rogers decoder ring, limiting the ability of U.S. computer makers to meet the legitimate business needs of international customers.

Availability, the third component, is a measure of the ease with which you can get your data when you need it. Schindler notes that the industry isn't quite sure yet how to measure this, though he's certain it will be in terms of time. When the Internet system was brought down by a hacker, no damage was done to data in the system, Schindler says. The damage was the loss of system availability.

Metrics for these factors are gradually developing and will take the form of standards, local at first and later on an international level. "Security and quality are similar," says Schindler. "Up until a few years ago, quality was also an opinion." As metrics developed for the quality field, such as bugs per N lines of code and mean time between failures, metrics made quality quantifiable and achievable. Security now is in the midst of that process.

[Computer Slang]

Hacker — Electronic burglar. Unauthorized entry into computer systems for illegal fun, profit or mayhem.
Logic bomb — Routines placed in a computer to be set off later by the computer's clock or by a series of events, intended to crash a system.
Salami — Computer theft performed by slicing off small amounts of money from a large number of accounts.
Scavenging — Hacking for stray bits of data to help gain entry into a secured system.
Time bomb — Same as logic bomb.
Virus — A program whose sole function is to replicate itself endlessly, just like its biological namesake, creating a system crash.
Worm — A program that deletes chunks of computer memory.

The Orange Book

IN 1983, THE U.S. Department of Defense published its "Trusted Computer System Evaluation Criteria." Updated in 1985 and known more simply by the color of its cover as the "Orange Book," the publication is intended as a guide for companies wishing to sell computers to the government, where security is a requirement. It was the first major effort in defining and quantifying security and is the most important guideline for U.S. computer manufacturers.

A series of hierarchical security levels is set up in the Orange Book. These classes are:

- D — Minimal protection.
- C1 — Discretionary security protection.
- C2 — Controlled access protection.
- B1 — Labeled security protection.
- B2 — Structured protection.
- B3 — Security domains.
- A1 — Verified design.

Systems in level D fail tests for higher levels of security. Each level above that provides specific requirements that must be met to achieve that security designation, using a total of 27 different measurements. Most commercial customers are happy with systems that provide a C2 level of security, says Schindler. Those who delve further into the Orange Book will find it a source full of information, as well as a great cure for insomnia.

HP-UX release 7.0 is available at a C2 level of security, though Schindler notes that additional security enhancements beyond C2 have been added. He says testing is underway to certify HP-UX in one of the B-class levels.

On the far side of the Atlantic, as European unity progresses, action has taken place there on several fronts, and computer security hasn't been an exception. A European commission, including France, Germany, the U.K. and the Netherlands, has developed the Information Technology Security Evaluation Criteria (ITSEC) to represent its own concerns and requirements for security. A draft version of this document was released for

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review in May 1990. Naturally, just as the Orange Book represents the concerns of U.S. government and industry, so the ITSEC represents government and industry in Europe. The bad news is that the two views are different.

All the metrics of the Orange Book address data confidentiality. ITSEC tries to address both confidentiality and integrity as well. Because the two efforts will result in legal restrictions on computer sales, manufacturers like HP are concerned, says Schindler. "If there are numerous metrics out there, as multinational corporations, vendors have to ask themselves whose metrics they should use."

"Evaluation with the Orange Book takes at least a year and can easily take two or three years," he says. "This represents additional costs that are ultimately passed on to the users. If the metrics from the Orange Book and ITSEC don't agree, then which do you adhere to? To adhere to both becomes prohibitively expensive."

Clearly, an international standard with full participation from around the globe will be necessary, but that is likely to take time. For now, companies will take care of business and stay involved in the process. For HP, that means adhering to the Orange Book, but keeping a close watch on ITSEC developments. "We believe that a worldwide harmonization of these criteria is needed," says Schindler. "We see that there is a responsibility to work through standards organizations to let industry be a leader in this process rather than a follower."

Computer Ethics

AS CHILDREN DEVELOP, THEIR ability to get into trouble always seems to exceed their judgmental capabilities to avoid it. Technologies seem much the same, perhaps because they are wielded by those same, still-developing children. So just as wisdom lags behind brawn, judgment and ethics lope along somewhere far behind mips and megaflops.

Several problem areas have developed in connection with computer crime, with tendrils that trail off into areas of educational responsibility, national and international law.

Computer Ethics points out that little effort in college and university courses goes to the ethics of the computer sciences. According to Forester and Morrison, "Computer science students cannot be assumed to possess a social conscience or indeed have much awareness of social trends and global issues." This seems a stern indictment of both education and parenting, but perhaps it's worth considering. In the face of skilled criminals who can heist millions with their fingertips, you can't afford to make assumptions.

Criminal prosecution of hackers, which might serve as a deterrent, is difficult to effect. It becomes a nightmare for agencies who must enlist the cooperation of embarrassed corporations, multiple phone companies and even international governments to bring the bad guys to justice. Schindler points out that different countries, regions and cultures have different ideas about what constitutes a crime. Subpoenas for records in another state or country are no picnic, either.

If I sneak into your deepest, darkest data depositories for a peek, and I take nothing and make no use of the information, have I committed a crime? Does my reading it make me Bill the Baddie, up the river for a few years, or can I just make a face at you and walk away?

Schindler likens the situation to auto safety. At first, he says, there were no roads, and driving through cow pastures was rude, but not illegal. "What is acceptable today may not be tomorrow," he says. "We defined roads, then stop signs and stoplights." Making the rules as we go along is likely the way security and its ethical issues will have to develop, but giving it some thought on an individual level might help.

Security For The Masses

IF YOU ACCEPT THE premise that security in commercial systems is a good idea, an important question remains. Why do most of us not use it, or make its provisions useless by careless use?

One last car analogy may be helpful. Says Schindler, "A car manufacturer can put a seatbelt in the car, but there's nothing to prevent the driver from driving off without wearing it, his head stuck out the window." Nothing may go wrong, but if it does, the driver isn't likely to enjoy it.

Computers have adequate security features available today to meet most users' needs, says Schindler. Users just need to exercise some common sense. He commonly sees passwords written in plain sight on calendars or desk pads. HP's internal guidelines for UNIX system security include some handy suggestions for avoiding the careless security breach. I leave you with these.

- Do not program passwords into your softkeys. (Honest, the manual says people have done this.)
- Mix numbers and letters in passwords where possible, or make them long.
- Avoid words that can be found in dictionaries. Hackers can simply hook up a dictionary file and wait to break through.
- Don't use obvious personal information like the name of your pet iguana or your phone number.
- An example of a good password from the manual is a phrase translated into an easy-to-remember code: "I walk my two dogs on the beach" becomes IWM2DOTB.
- Change your password at least once a year, says the manual. A password I use changes every month.

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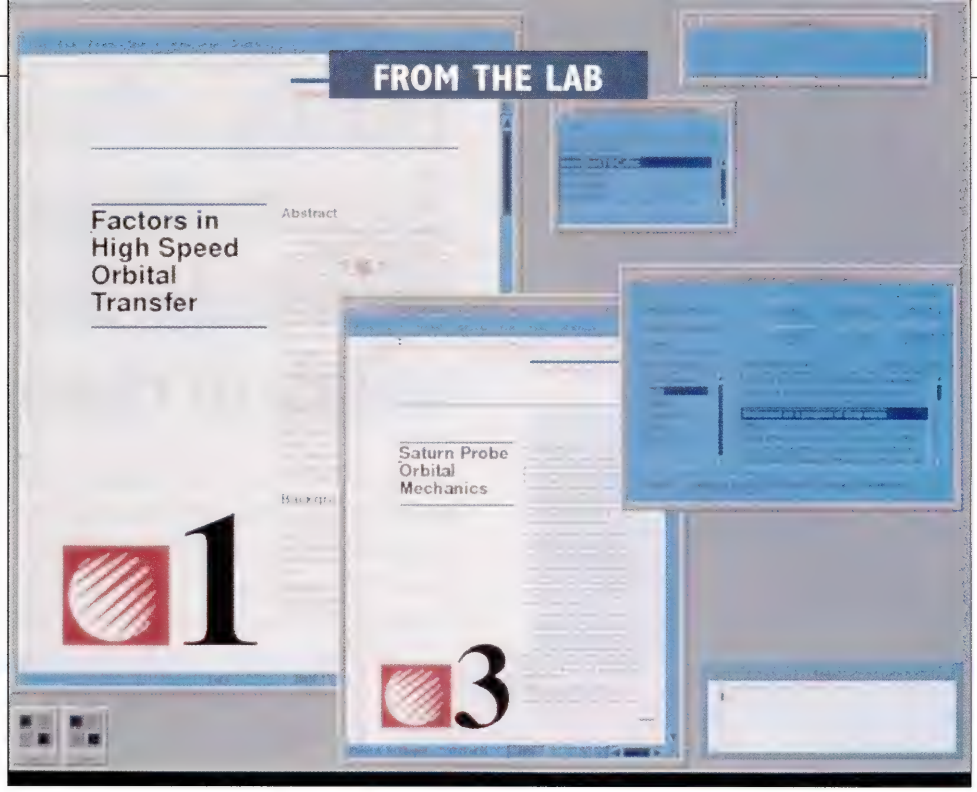

Frame Up!

Frame Technology's FrameMaker Gives Your Documents A Lift

FrameMaker, from Frame Technology Corp. (San Jose, CA), is an excellent document processing application for the HP 9000 Series 800. And, if after you've finished reading this, you think FrameMaker is just another desktop publishing application, I've done both you and Frame Technology a disservice.

Frame Technology calls FrameMaker an advanced publishing tool, which, for starters, is a reasonable description. FrameMaker is the premier application for companies that write manuals as part of their product or create high-quality documents of any kind in the course of doing business.

Start-To-Finish Support

Unlike many page layout applications on PCs and UNIX workstations, FrameMaker can help you in nearly every step of preparing a publication, from entering the text to producing final output: It has full text entry like a powerful word processor, the ability to capture and import screens and scanned images, and the ability to create graphics with a powerful drawing tool. In addition, it features a utility called FrameMath, which allows you to incorporate calculations and scientific notation into your publications.

The FrameMaker configuration I tested was for X Windows running on an HP 9000/834. The system includes 32 MB of memory, a color console and a 300-MB hard disk. It's attached to an NFS network of other systems including other workstations and X terminals. FrameMaker uses the X Windows/Motif interface from the Open Software

By Miles B. Kehoe

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Now that you've prepared... scheduled...and launched your batch jobs, isn't it time to find out what they're doing?

With TeleScope, you do just that. TeleScope is a unique batch job interface that offers the HP 3000 user a combination of commands to quickly and easily communicate with active jobs, as well as, the programs within those jobs. TeleScope isn't a job scheduler. And it doesn't detect batch job aborts. What it does is give you total control over your batch job environment.

Job Status

TeleScope's monitor commands make batch job communication easy. As a matter of fact, communication is so easy, you'd swear you're communicating with a session, instead of a job. And the TeleScope interface is simple to establish. Just add one communication routine at the beginning of each program within the job. And that's it! From that point, it's easy to determine job or program processing times, job disposition, current phase of a multi-phase job, or gracefully end, suspend, or resume a job.

Program Status

In addition to the ability to interface with your batch jobs, TeleScope goes a step further by allowing you to communicate with your programs as well. By adding one of many TeleScope intrinsics at the beginning of your programs, you can alter the priority of a program, get and retrieve the JCW's, pause... resume...or end an active program. TeleScope also offers you the flexibility of viewing the contents of a variable or obtaining other vital, up-to-date information. For example, TeleScope could be used to suspend a job in order to perform a backup, then resume that same job once the backup has completed. The possibilities are endless!

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Foundation (OSF), which HP sells for all its workstation families.

Frame Technology ships versions of FrameMaker for all HP-UX workstations (Series 300/400/800) on the same tape. The installation program knows which system you're using as the X client and adjusts the installation accordingly.

Frame Technology uses a floating license to control the number of users. You purchase the license for the maximum number of concurrent users you need, and FrameMaker permits that number, no matter which workstations are active. This method of enforcing license agreements is becoming more common in UNIX environments. In my opinion, it's one of the better ways to implement licensing over a network. You pay for what you need, and you get what you pay for.

Installation Tailored For HP-UX

The installation procedure is well explained in a separate manual written specifically for HP-UX. It presents virtually all the information a system administrator needs to complete the process. The installation must be performed as root, which normally isn't a problem on HP-UX workstations. However, it indicates that the process isn't something a novice user should take lightly.

One of the most difficult steps in the process is required because FrameMaker uses long file names, which now are available under HP-UX. Depending on how you've configured your system, you may need to reconfigure the kernel to support them. I was fortunate that my system coexists in a network of systems from other vendors, so I've always used the longer file names. Nonetheless, "Installing FrameMaker" is written specifically for HP-UX, and even this potentially time-consuming process is clearly documented.

The installation manual has another nice feature not always included in user documentation: One section is for someone experienced with HP-UX, and another is for those unfamiliar with the operating system. If you're comfortable with HP-UX, you can breeze through the first part. If you're more conservative in your approach or if you're not a wizard at HP-UX, the latter leads you through the entire process, step by step.

Unlike many page layout programs FrameMaker is intended to be used as the primary interface for the writer. It can be the only tool you need to go from the original idea to the printed page.

Type, Design, Print

Unlike many page layout programs, FrameMaker is intended to be used as the primary interface for the writer. You don't use one program to prepare and edit text and another program to do the layout and printing. FrameMaker can be the only tool you need to go from the original idea to the final printed page.

FrameMaker features all of the usual capabilities you expect in a windows-based application. Keyboard shortcuts display when you pull down a mouse menu, and the macro capability lets you record and repeat common operations. What's more, you can define your own shorthand for use as a typing aid.

Another neat function lets you uppercase or lowercase a range of selected text or apply first-letter uppercasing only. If you're familiar with less functional text editors, you might find FrameMaker suitable simply as a word processor.

At the heart of a FrameMaker document are templates and styles, that describe the format of the document and of individual paragraphs. You can specify different templates for the first and last pages of a document, as well as for the body. Using templates also allows you to define different layouts for left and right facing pages, which FrameMaker automatically applies as it prints.

FrameMaker also allows you to define multicolumn templates, and it's fairly easy to pour text from a single-page format into a multipage template. The templates don't limit you to what I mention above; you can have several templates and styles defined and apply them anywhere in your document.

Check It Out

FrameMaker includes a powerful tool for spelling, but to think of it as a simple dictionary is an understatement. The primary dictionary has 130,000 common words in each of the supported languages (French, German, UK English and Standard American English). The dictionary controls both spelling and hyphenation, and words in the primary dictionary can't be changed. You can define a personal dictionary for words and phrases that aren't in the general dictionary.

Unlike most applications, FrameMaker supports a site dictionary and a document dictionary. These allow you to define words relevant throughout your company, as well as words that may be valid only within a particular document. Another nice touch is the spell checker's ability not only to learn words, but to unlearn them, too. I'm often guilty of accidentally adding misspelled words to my personal dictionary. With some programs, there's no way to remove them.

In addition, FrameMaker also lets you check for many common errors you make while preparing large documents. It checks for repeated words or punctuation and extra spaces before and after punctuation. It even identifies unmatched or incorrect quotation marks and unusual capitalization.

Making Pictures

FrameMaker sports excellent graphics capabilities. The standard product includes the ability to import graphics files in several formats. This allows you to include X bitmap images, for example, as pictures in your document.

You also can make a snapshot of a

screen using FrameMaker and incorporate the screen image into a document. Anyone attempting to describe what a computer screen looks like should be very fond of this capability.

FrameMaker includes a fairly powerful drawing tool, not unlike the drawing and painting utilities included with Microsoft Windows and the Apple Macintosh. You can create geometric shapes, add shading and insert text to make illustrations for your publication. You can store drawings in a library for use in other documents.

FrameMaker supports any PostScript-compatible printer you can connect to your system. My network includes several Apple LaserWriters, but the HP LaserJet with a PostScript cartridge should work fine.

A nice feature for publications with color images is the ability to do spot color even on a monochrome display, as well as the ability to print cutouts representing each unique shading or color. This lets you create the masters for a printer to use directly, whether your illustrations and page patterns are black and white or full color.

Advanced Features

FrameMaker includes some useful built-in utilities for publishing a document. There's the automatic indexing tool, which takes the words and phrases you noted during text entry to create an index. When you print the document, FrameMaker figures out the page references to create the index.

There's also a cross-reference capability. A writer can reference a section name, and it will be replaced by the actual page number during printing. When you create an index, you automatically generate a table of contents from the section headers in your document. Again, FrameMaker figures the page numbers when you print.

If you're writing a book instead of a simple document, FrameMaker gives you a special tool to work with the files that make up your book. This capability allows you to describe the individual files that make up the chapters and sections of your book, along with the figures and illustrations that are to be included.

Then, much like the MAKE files programmers use to automatically determine which parts of a program need to be compiled, the book utility can determine which files have changed since you last printed a draft of your book. This helps you better manage both accurate manual generation and resources like your printer and paper.

When you're printing drafts, you often want to include filename or version information, and FrameMaker allows this. In fact, you can use any system variable (e.g., date, time, filename) in the body of your document, or in page headers or footers. FrameMaker supports footnoting as well.

Finally, FrameMaker supports several text and graphics formats. Frame offers additional filters to allow you to import files in other formats if you're using a format not supported in FrameMaker.

Making Excellent Even Better

As excellent as FrameMaker is, it could be even better. Almost all of my suggestions for improvement fall under the heading of "user interface" and are relatively trivial.

First, FrameMaker's documentation is only marginally useful. There's no doubt that it is a large, powerful application, and the documentation provided is nicely produced. However, some sections of the manuals didn't go into enough detail for me. There weren't glaring omissions, but some features were glossed over. For instance, Frame provides several sample templates, but the section on creating my own template from scratch seemed a little light. Luckily, Frame Technology's technical support is responsive, highly competent and just a phone call away.

FrameMaker uses UNIX-like syntax throughout. Most writers and documentation people aren't UNIX wizards. When you specify characters to ignore in spelling, for example, you must escape special characters like tabs with a backslash. Thus, a tab is **\t** and a new line character is **\n**.

Although it's UNIX-like, FrameMaker isn't very UNIX-standard. It looks much more like a Macintosh or Microsoft Windows application than a standard X application. Someone who knows enough UNIX or HP-UX to accept the way FrameMaker handles special characters may find it difficult to adapt to the interface.

Finally, a feature I like about many word processing applications is the ability to turn on underline or bold as I'm entering text. With FrameMaker you define text enhancements for paragraphs and go back and change the enhancement on a section of highlighted text.

A Decision Maker

For years consultants have advised users to first find the software that meets their needs, then buy a system the software supports. More often than not, we've bought hardware first and scrambled to find software that would run on it. FrameMaker is the first program I've seen influence a number of large hardware purchasing decisions.

Now that FrameMaker is available for virtually all HP-UX platforms, those of us who already own HP hardware can make our marks in publishing. If you write manuals, publications or entire books, this is probably the tool for you. ■

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Riviera's HotKey3000 Lets You Switch Between Applications In A Flash

By John P. Burke

Sometimes I see a product and I wonder why someone didn't come up with it before. Someone like HP, for instance—they certainly have the expertise. Or me—I certainly could've used it. Well, in the case of HotKey3000, Riviera Software (Austin, TX) has come up with a product that many people (and many companies) probably wish they'd thought of themselves.

How many times have you wished you could suspend a program on your HP 3000, go do something else (like run one or more other programs), and return to your original task exactly where you left it?

Of course, you could use multiple terminals or a PC with a terminal emulator and multiple serial ports and HP 3000 ports, or a PC on a LAN connected to the HP 3000. Or if you have NS/3000, you could loop on yourself and create multiple sessions.

But these solutions are all expensive, inefficient or incomplete. What you need is an efficient, inexpensive way to switch among various programs, while preserving status, screens, etc.

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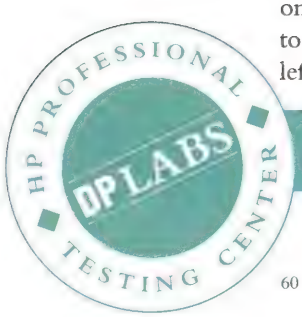

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HotKey3000's documentation consists of a 58-page spiral-bound manual divided into six sections with appendices and a glossary. The manual contains a brief tour of HotKey3000 and detailed descriptions of HotKey3000 options. All in all, the documentation seems just about right.

programs from a menu in a plain vanilla session. Any or all of these programs can be running in logically different groups and/or accounts. It then lets you toggle (hotkey) back and forth among the programs with your environment (screens, JCWs, function keys, etc.) automatically saved and restored as needed.

Sound exciting? It sure did to me. I was anxious to give HotKey3000 a workout, and it didn't disappoint me.

HotKey3000 runs on all HP 3000 Classic and Spectrum machines. We installed our copy of HotKey3000 (Version A.1.2) on our HP 3000 Series 37 running MPE V. After you've restored the program files from tape and the installation jobstream is complete, you need to initialize HotKey3000 before using it for the first time.

To use HotKey3000 with your programs, you also need to copy a file called HOTKEYSL into the account where your program resides. The program XLOCAL is provided with HotKey3000 and allows you to do this.

Double-Click Switching

I was admittedly skeptical about some of the claims for HotKey3000, particularly those involving the time it takes to switch environments and its ability to save and restore the complete environment, including screens and their contents. But we tested the product using an HP-compatible terminal over a 9600 bps direct connect line, and its performance was impressive.

HotKey3000 enabled us to switch from one program to another and to return to the same spot we left, same screen, same cursor position and exactly the same program state. It took a few seconds each time to switch back and forth, but much less time than required to exit one program and start up another.

HotKey3000 can be called up programmatically or run as a program. When run, HotKey3000 displays a menu from which you can make use of predefined guides. A guide is a list of programs that you choose to run under HotKey3000. Each guide can contain up to 32 programs, and you can have an unlimited number of guides.

HotKey3000 allows you to switch from one application to another by using function keys as the hotkeys. Once a guide is loaded, programs in that guide are displayed in a menu. You can access a program in the menu by pressing the function key that corresponds to that item.

From here you can hotkey back to the main menu or go directly to another program by double clicking the function key that corresponds to that program. (Double click the function keys the same way you double click a button on a mouse). In addition to switching from one program to another, HotKey3000 lets you switch from one user, group and/or account to any other.

HotKey3000 comes with its own sample guide file called "Guide." When loaded, it displays five programs that you can hotkey to. For example, you can hotkey to EDIT/3000 by pressing F1. From there, you can hotkey back to the main menu or go directly to IMAGE by pressing F2 twice.

Because of the way its user interface is designed, HotKey3000 can be used as a menu handler to create an integrated system from separate, perhaps normally incompatible, pieces. Usually, no modifications to existing programs are needed, so you can integrate HP or third-party programs with home-grown programs.

HotKey3000 successfully, efficiently and surprisingly quickly handled every situation we threw at it: VPLUS screens, normal character mode dialogue, switched groups and accounts, programs, which themselves launch processes and even a home-grown character-mode screen formatting tool. HotKey3000 never even hiccupped.

Protection Plus

HotKey3000 allows you to protect your users from themselves and each other, as well as you from them, by allowing you to restrict access to various features. This can be done in a variety of ways: "PARM=" and "INFO=" values, JCWs and OPTION settings within HotKey3000 guides.

HotKey3000 contains two interesting and somewhat complementary options: Broadcast and View. Broadcast allows you to send the last screen of the previous tool to other terminals, provided they all run HotKey3000.

If you're a system manager, View allows you to capture on your terminal a copy of the most current screen of any HotKey3000 user. This option presents interesting possibilities.

The developer of HotKey3000 also conveniently provides a freeze option, which allows you to leave your terminal unattended while you're in the HotKey3000 menu. You're prompted for a password when you return, which you must then repeat back to unfreeze your terminal.

Learning To HotKey

To help you master the possibilities of HotKey3000, the program installation tape contains an automatic demo that

walks you through most major functions. The tape is valid for a 30-day period following installation.

HotKey3000's documentation consists of a 58-page spiral-bound manual divided into six sections with appendices and a glossary. The manual contains a brief tour of HotKey3000 and detailed descriptions of HotKey3000 options. All in all, the documentation seems just about right.

HotKey3000 is a solid, effective way to increase user productivity and system throughput in an interactive environment. It's particularly useful in software development but also can be used to create a more fully integrated application system from existing pieces.

HotKey3000 is extremely powerful, and care should be taken when setting up an end-user environment with it as the controller. However, the product contains sufficient security and customizing features to reasonably protect system integrity.

HOTKEY3000

SYSTEM REQUIREMENTS: HP 3000 MPE V or XL.

PRICE: $1,500 to $4,500

RIVIERA SOFTWARE INC.

HEADQUARTERS:
7901 Havenwood Drive
Austin, TX 78759
(512) 346-0962
(512) 338-1455 FAX

FOUNDED: 1988

PRODUCT LINE: HotKey/3000

CIRCLE 290 ON READER CARD

Riviera recently announced version A.1.3 of its HotKey3000 application switcher. This version supports native mode programs including Vplus that allows programs like ASK/MANMAN to be installed on MPE XL. New features include, UDCs fully supported, additional HotKeys, X.25 protocol support, DO and REDO implementation, and the ability to use user program's own refresh function. You now can enable CTRL-Y for programs that aren't using it.

Afterthoughts

- *HotKey3000 lets you switch between applications with a single keystroke.*
- *HotKey3000 runs on HP 3000 MPE V and MPE XL systems.*
- *Options include viewing information on another user's terminal and also sending your screen to one or several terminals.*

In Living Color

Zentec's 9394c Color Terminal Makes An Impressive And Functional Display

Nothing makes a nicer statement in a computing environment than a well-designed, well-engineered high-resolution color terminal on the desktop.

The 9394c color terminal from Zentec Corp. (Tallahassee, FL) is a plug-and-play, high-resolution terminal for the HP environment. It consists of three components — a keyboard, a logic module (or wedge) and a 14-inch video display monitor.

The 9394c provides an 80- or 132-column video display, screen set-up menus, (bidirectional) jump or smooth scrolling and a complete set of alphanumeric and graphics characters. It also offers several editing features, a pop-up calculator and programmable function keys.

Brighten Up Your Desktop

We unpacked and assembled the monitor, logic module and keyboard in less than 10 minutes. Because the monitor's AC power cord

By George T. Frueh

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BACKUP+/XL's Tape Manager & Librarian module prints tape identification labels, selects, expires and scratches tapes, prevents active backups from being overwritten, identifies unreliable tapes, and allows quick online lookup of all backup attributes, including files contained on tapes by name.

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CIRCLE 234 ON READER CARD

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The 9394c has two bidirectional serial communication ports that allow you to connect to and toggle between two host systems simultaneously.

is plugged directly into the logic module, all you need is a single 110-VAC outlet to power the terminal. An on/off switch, located on the front of the logic module, supplies power to both the logic module and the monitor.

The 9394c has two bidirectional serial communication ports located on the rear panel of the logic unit labeled host 1 and host 2. These ports allow you to connect to and toggle between two host systems simultaneously. Each port supports EIA RS232C or RS422A. A third RS232C port, labeled printer, also is available on the rear panel of the logic unit.

We disconnected our monochrome amber Zentec terminal from our HP 3000/37, which serves as the system console, and attached our serial cable to the host 1 port on the 9394c.

After powering up the terminal and a short pause, the unit sounded an audible tone and displayed a white MPE colon prompt against a light blue background. The difference between our old monochrome amber terminal and Zentec's 9394c display was refreshing.

We tested the 9394c's dual-host capability by connecting a second serial line from the HP 3000 to the host 2 port on the 9394c. Toggling between host 1 and host 2 is done by pressing the Extended Character key along with the F1 key.

Highlighted Features

The 9394c uses Intel's 80188 microprocessor running at 8 MHz. The keyboard has 108 keys and includes a typewriter area, numeric pad and independent editing and cursor control keys.

The video display size is 27 rows by 80 or 132 columns, and it's VGA compatible. The 9394c has a screen-saver feature that blanks the screen after a set period of datacomm and keyboard inactivity. You can set the screen saver to go active after one to 255 minutes of inactivity, or disable the screen saver entirely.

The display attributes include reverse, blink, security, underline and low intensity and can be used in any combination.

The 9394c comes with a 64-character line-drawing character set that lets you draw illustrations and tables on the terminal's screen. The host computer also can utilize the line drawing character set to build forms on the display screen.

This character set is enabled by a CTRL-N. When enabled, it's active from the current cursor location to the end of the character row the cursor is on. Moving the cursor above or below a character row disables the line drawing character set and re-enables the ASCII character set. You also can disable the line-drawing characters by pressing CTRL-0.

Data Logging is a useful feature that involves your printer. Data Logging allows a specified amount of data stored in the terminal's display memory to be automatically transferred to the printer. For example, when the terminal's display memory becomes full, any further entries into the memory (either from the keyboard or from the host) will cause the top line stored in the display memory to be overwritten and lost.

Top Logging mode transfers the first line stored in the terminal's display memory to the printer before the first line is overwritten. The line that's transferred no longer will be in the terminal display memory, but you'll have a hardcopy of that line. As new data is entered into the terminal, the first line is transferred to the printer before it's overwritten.

Bottom Logging is similar to Top Logging. With Bottom Logging enabled, you can create a hardcopy of lines displayed on the screen in the order they're entered or received. The last line stored in the terminal's display memory is transferred to the printer before it's overwritten. It contains 20 pages of memory that can be scrolled through via the SHIFT Cursor up/down combination.

Menus And Other Features

The 9394c lets you customize your communications, function keys and screen colors using menus. Menus are accessed through a combination of keystrokes. For example, the terminal configuration menu is accessed via the User Key, then F8 and finally F5.

The terminal configuration menu is used to establish certain operating conditions within the terminal. You use this menu to setup the protocol that governs the flow of data between the host computer and the terminal.

The datacomm configuration menu lets you establish the datacomm interface settings, such as baud rate, parity and number of databits for the hosts. The 9394c is capable of transmitting from 150 to 38.4 Kbaud.

The external device configuration

- The 9394c is VGA-compatible and lets you select from 15 foreground and 16 background colors.
- Two host serial ports let you connect to and toggle between two host computers.
- The 9394c is HP and DEC compatible.

menu is similar in nature to the datacomm configuration menu. However this menu lets you establish baud rate, parity, and number of data bits transferred between the 9394c and an external printer.

The 9394c has a user function key definition menu that allows you to program function keys F1 through F8 to perform operator-designated functions. This is in addition to normal function key features.

You can assign a character string to a function key. The character string can be up to 80 characters in length and include control codes and escape sequences. For example, you can assign one of the terminal's video attributes to a function key. This allows you to program a function key to either display a video attribute on the terminal or send it to the host computer.

Finally, the color assignment menu lets you change the foreground and background colors on your screen. There are 16 background colors and 15 foreground colors from which to choose. As you select different color choices, the screen display changes to show the new foreground and background color selections. Once you make your changes, you can save your new palette by pressing a function key.

Added Bonus

A nice bonus feature of the 9394c is its built-in, four-function calculator. The calculator is accessed by pressing the large C key located in the same row as the function keys. The calculator appears on the right side of the display. Numbers are entered with the numeric keypad.

The 9394c comes with a user's manual that helps get you started and fully explains the different options in each of the configuration menus. If you're looking to upgrade from monochrome to color, you'll find the 9394c is easy to use and even easier on your eyes. ■

Datamaxx 9394c Color Data Communications Terminal

SYSTEM REQUIREMENTS: Compatible with HP2392A, 700/92 and 700/94; ANSI X3.64, DEC VT52, VT220, VT 320; Emulation is HP 700/94.

PRICE: Suggested list, $1,495

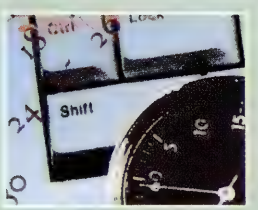
HEADQUARTERS:
The Datamaxx Division Of Zentec Corp.
3000 Commonwealth Blvd.
Tallahassee, FL 32303
(904) 224-8213
(904) 574-6940 FAX

PRODUCT LINE: Custom Display Terminals.

FOUNDED: 1973

OWNERSHIP: Public

CIRCLE 289 ON READER CARD



HP-UX

Andy Feibus

Custom X

Under HP-UX, X is started by executing the script **/usr/bin/x11start** from your system's graphics display console. This Bourne Shell script contains code to configure the necessary shell variables and then to run **xinit**, which starts the X server program (**/usr/bin/X11/X**) for your display console.

Specifically, two shell variables are assigned values by **x11start**: DISPLAY and PATH. DISPLAY is assigned a string describing your server's location and PATH is changed to include the directory **/usr/bin/X11**.

Once the server program starts, the program looks into your *home* directory for the shell script **.x11start**, which contains the commands you want to execute to create your X environment. This script is initially created by **x11start** from the file **/usr/lib/X11/sys.x11start**. You should modify **.x11start** to specify which X clients you want to automatically invoke when X is started.

In general, the clients you will invoke with **.x11start** include a window manager (e.g., **mwm** or **uwm**) and a terminal emulator window (e.g., **hpterm**). Additionally, you can also invoke other clients from this script; some commonly invoked clients are **xclock** (the X timepiece) and **xload** (a graph of the current system load). A sample **.x11start** file is listed in *Figure 1*.

Once your initial client programs are invoked, **.x11start** waits until you press the key sequence CTRL-SHIFT-RESET from your console: This sequence terminates the X server, automatically causing all clients to terminate.

Server Configuration Clients

As discussed last month, the file **.Xdefaults** specifies the values for certain client configuration options. You also can specify certain X *server* configuration options; however, to specify these options, four client programs are provided: **xsetroot**, **xhost**, **xset** and **xmodmap**. Many options, more than are discussed here, are available with these clients. For HP-UX users, manual pages for these clients are included in *Using the X Window System*.

The **xsetroot** program controls the color for the server's root window. The root window is visible as the background area on the screen onto which all other windows are placed. By default, this area is initially a pattern of alternating black and white pixels.

To change the color of the root window to salmon, execute the following command (from your terminal window):

```
$ xsetroot -solid salmon
```

The **-solid** option causes all root window pixels to change to the color specified in the next argument (in the example, salmon).

With X, the **bitmap** program provides a way for you to create (and save) a rectangular image containing **1**s and **0**s. The image files created with **bitmap** may be used with **xsetroot** to specify a background pattern. For example, you use **bitmap** to create an image (and save it to the file **rootmap**). To use the contents of **rootmap** as your root window pattern, use the command:

```
$ xsetroot -bitmap rootmap
```

To specify the colors you want to use for the foreground (**1**s) and background (**0**s) pixels, use the **-fg** and **-bg** options in conjunction with the **-bitmap** option. For example:

```
$ xsetroot -bitmap rootmap -fg
cyan -bg black
```

With **xset**, you can set certain hardware and system-specific options. For example, if you want to triple the cursor's speed when the mouse is moved quickly, use the command:

```
$ xset m 3
```

With this setting, a flick of the wrist (while holding the mouse, of course) can cause the cursor to travel from one side of the screen to the other.

Additionally, **xset** may be used to control the server's *screen saver* feature. Screen saver prevents a static screen from being "burned" into your monitor. When user input is not detected for a certain period of time, the screen saver feature blanks the screen; when you move the mouse or press a key, the screen's contents are restored.

To activate the screen saver feature after five minutes of no user input, use the command:

```
$ xset s 300
```

The screen saver activation period is specified in seconds; **300** indicates that it will be activated after **300** seconds of no user input.

To view the current settings for features controlled by **xset**, use the command:

```
$ xset q
```

You might find it convenient to change the meanings for the mouse buttons or to assign a particular meaning to a keyboard key. These actions are performed with **xmodmap**. For example, the default mouse buttons are assigned specifically for right-handed people: The left button is button one and is designed to be pressed using the index finger of your right hand. For left-handed people,

```
#! /bin/sh
#######################################################
### X Window System Starting-Configuration Script ###
#######################################################
###
###  1) Standard output and error output for programs
###  started by this script are redirected to
###  $HOME/.x11startlog. This avoids output to the screen
###  that would detract from the window display. If an
###  error occurs starting X11, the logfile would be a good
###  place to look for a clue to the problem. '

exec >$HOME/.x11startlog 2>$HOME/.x11startlog

# if there was no $HOME/.Xdefaults, $doxrdb is set to
#   2) 'xrdb -nocpp -load /usr/lib/X11/sys.Xdefaults'
# by /usr/bin/x11start; otherwise this is a nop.

$doxrdb
unset doxrdb

###  3) The following X clients start as part of the initial
###  window system environment. Users can change or add to
###  these default clients to set up a custom environment.
###  All clients started in this script should be run in the
###  background.
###
###  x11start can pass global parameters to this script.
###  For example, it can pass a "hostname:display.screen"
###  for all clients to use. Another use would be to pass
###  an additional parameter that all of the clients accept,
###  such as "-xrm *foreground blue". If the user does not
###  pass in a parameter, '$@' is null.

mwm $@ &    # Start the OSF/Motif Window Manager.
sleep 5     # Allow time for initializing mwm before
            #  starting other clients.

xsetroot -solid Salmon   # Set color for root window

# Start the Console terminal window
hpterm -C -geometry 40x4-0+100 -iconic -T Console \
     -n Console $@ -e sleep 20000000 &

# Start the first user terminal window
hpterm -geometry 80x24+0+0 -T 'Local Window' \
     -n 'Local Window' $@ &

# Start the clock in the top-right corner
xclock -geometry 75x75-0+0 $@ &

###  4) The following "wait" call ensures that all
###  terminated child processes are cleaned up (i.e., no
###   processes are left around).

wait

###  5) All X clients started by this script have terminated
###  at this point. Now sleep forever (if this script
###  terminates the window system will be terminated). When
###  the window system is terminated with
[Shift][CTRL][Reset]
###  this script is killed.

exec sleep 2000000000

###  The window system is terminated when this script
terminates.
```

Figure 1. x11start file.

this mouse button configuration can be uncomfortable.

To reverse the ordering of the mouse buttons, so that the right-most button is button 1 and the left-most button is button three (on a two- or three-button mouse), use the command:

```
$ xmodmap -e "pointer = 3 2 1"
```

Using **xmodmap** to change your keyboard key mapping (e.g., changing your backspace key to act like a delete key) is much more complicated. In general, you won't remap your keyboard's keys; if you feel so inclined, refer to your X documentation for details.

Each X client runs on a particular host system and displays on a particular server (usually these are the same systems, but sometimes not). The file **/etc/X0hosts** contains the list of which host systems can use your screen as a server. This file is usually created and maintained by the server's system administrator. Additionally, you can temporarily add or remove host systems from this "permitted" list with the **xhost** program.

To add a particular host system to your list of permitted systems, use the command:

```
$ xhost +sysname
```

where *sysname* is the name assigned to the host system. To temporarily remove a host system from the list, use the command:

```
$ xhost -sysname
```

The "permitted" list is reset (to the systems in **/etc/X0hosts**) when the server program is restarted. To list which host systems are currently permitted to use your server, run **xhost** without command-line options.—*Andy Feibus is an interplatform systems consultant, based in Atlanta, GA.*

APOLLO

We Have Lift-Off !

Fred Mallett

Editor's Note: HP Professional *welcomes Fred Mallett as Apollo Editor. A member of the ADUS board of directors, Mallett also teaches Domain/OS usage, shell scripting, networking and system administration for FAME Computer Education, Bloomington, MN. "Apollo" will appear bimonthly.*

Because this is my introductory column, I'm going to highlight some possible subjects for future columns. Where the column goes is up to you. If you send me some fan mail, take a moment to suggest topics you'd like to see covered.

The first and most obvious direction to take would be the technical tips route. We could break these down into several categories (i.e., Tips For New Users, Tips For Old Hands, New Tips On New Products, etc.). Here's one for starters. I suppose you could say it falls under the category of New Tips On New Releases.

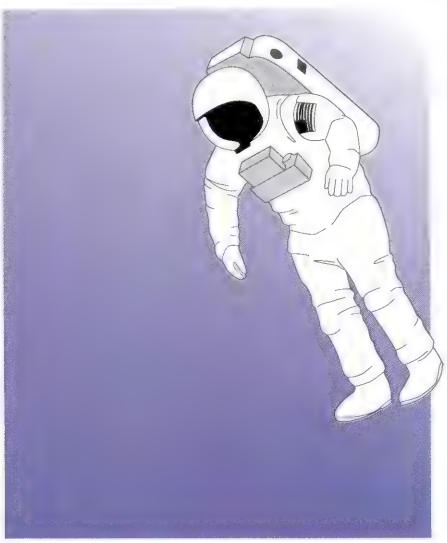
Your First Tech Tip

The new SR10.3 **shut_lock** file could be a welcome feature at many Apollo sites. To enable **shut_lock**, you create the file **`node_data/etc/dm_display/shut_lock** (the 10.3 release notes have the pathname wrong), then protect it so that only accounts that you want to be able to shut the node have P rights to the file.

If someone issues the **shut** command at the DM **login:** prompt, and the **shut_lock** file exists, the command will be ignored. If anyone issues the command at the DM **command:** prompt, the DM checks that they have P rights to the file, otherwise the command is ignored. The **/etc** shut-type commands (**reboot**, **shutdown**) still function normally, that is, you have to be root to execute them. Hopefully that will help you keep your nodes safe and sound.

Exotic Regions

Another technical path would be to explore obscure features of Domain, such as "functions" in the bourne shell. Some of you may be saying to yourself, "That's not obscure, functions came out in the



SYS V.2 (or was it SYS V.3?) version of the bourne shell." Others of you may think that I'm crazy and have the korn/bourne shells mixed up. Nope.

Here's how they work in the **/sys5.3/bin/sh** bourne shell: (Note that using the **ver** command to change from **bsd** to **sys5** won't enable functions, because the program you're running is still **/bsd4.3/bin/sh**.)

To create a function use this syntax:

```
$ function_name()
> { command1
>  command...
> }
$
```

To display functions, use **set**. (Yes, they show up distorted.)

To execute a function issue the function name as a command, the **()** at the end of the name denotes that the function will accept arguments. The **()** must be there even if you don't plan to pass arguments to the function.

Arguments are handled in the same way as they are by the shell and shell scripts, with **$1**, **$2** and so on, being used to substitute the arguments within the shell or shell script. If the shell script uses functions, be sure to use the **#!/sys5.3/bin/sh** shell directive, not **#!/bin/sh**.

System Oddities

A third technical path we could take would be to discuss some of the quirky aspects of Domain/OS. An example of such a quirk is the amusing thing the DM **ex** command does when you issue it while running X. Because X owns root mode, all DM type processes, such as shells and the DM itself are removed, but X is still running. The moral is: Don't execute **xdmc ex** when running X.

Another system idiosyncrasy I should warn you about is the DM output error message, **CPS invalid command**, which appears when you boot under SR10.2 or SR10.3 with a .1280color or .color monitor. The error is caused by an incorrect startup.1280color or startup.color files on the release tapes. To correct the problem, you can simply edit out the extra **(x,y)dr** command in your .1280color or .color file..

One more SR10.3 oddity worth mentioning is the DM rectangular text range defining facility (DM command **dr;echo -r**). This command is especially good at leaving artifacts around the screen marking area on color displays. My advice is to use the refresh screen (^F) key to get a peek at what you have really defined as a region. (In case you

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CIRCLE 192 ON READER CARD

Postal rates went up again...

had any doubt, HP Apollo has been notified of this bug.)

A Watchful Eye, A Loud Voice

One very positive benefit of being an Apollo user is that the Domain/OS community, represented as the Apollo Domain User Society (ADUS), is and always has been a very vocal group.

Our outspoken ways have enabled us to disseminate information about new products and to stay on top of the vendors. HP's recent about-face on the decision not to port OSF/1 to Apollo DN systems is a prime example of the influence our user community can have. The reversal stemmed directly from feedback users gave HP about its decision.

Hopefully, this column can serve as a venue for this type of information and constructive criticism. By bringing out vendors' decisions and policies that affect the future of the Apollo user community at large, we may be able to continue getting the products and support we need. Apollo and now HP Apollo have always listened closely to the user community, especially when we talk real loud. Here are some product releases and developments we can expect from them in the near future.

Promised Splendors Of SR11

The new SR11 is planned to have support for the following hardware: DAT, CD-ROM and optical jukeboxes. In fact, one of the standard distribution media's for OS release will be CD-ROM — the floppy disk will no longer be used as a distribution media. (To tell the truth, I'm surprised it made it to SR10.)

SR11 will not run Sau2-6. I don't see this as a problem because they can be left on SR10.3, which is compatible to SR11 over the network, for file sharing and CRPing. Besides, would you really want to run a {DN3xx|DN5X0} under X windows at SR11 on 3 MB of main memory? (I know, a DN590-T can have lots of memory, but...). One of the reasons for this decision was that it allowed HP Apollo to eliminate MC68010 and MC68000 instructions in SR11. Using only MC68020 instructions should make for some speed improvements.

There is a strong commitment by HP Apollo to produce a true ANSI C compiler for SR11, and there are also plans to enhance DDE2.0 to a Motif-style user interface. The default window system at SR11 will be X, but the the DM will still live.

X Windows will be implemented differently at SR11 than at SR10. Currently (that is, in SR10.3 and SR10.2), X and DM run in share mode, and you must select either X or DM to own the root window. With SR11, X will have a "hot key" mapped to swap the display environment from X to DM as root window. This means you will not be able to have DM-type graphics windows (3-D GMR, 2-D GMR) on the screen under X Windows.

HP/Domain HP VUE 1.0, the graphical user interface with DOS Windows-like file system features (i.e., push button directory lists, click to copy or edit a file) is available to run on SR10.3. But the complete HP VUE, which offers user-configurable menus for virtually any task, is currently available only for HP-UX users and is planned to be available for us at SR11. My guess is that it will be offered as an optional product.

System administrators at SR11 will gain a DM screen-lock capability that is supported by HP Apollo, rather than the unsupported ones most of us currently use (i.e., **lock** or **gone**). A more simplified install procedure also is planned. (I hope we don't lose the sophistication of RAI. I hate the idea of having to manually customize installs after the fact because someone couldn't figure out the novice mode of **minst**.) Only closed ACLs will be allowed at install time (This could upset some software development houses). Also, auto-logouts will now be configurable, and there will be some security enhancements (fixes?) to {r|w}bak.

SR11 is supposed to be compliant with POSIX 1003.2 (the commands section). To what extent this will be true was still being decided last time I

snooped around. The question seemed to be: Would SR11 have triple command sets (SYSV, BSD, and POSIX), dual command sets (SYSV and BSD) or just POSIX commands? The future command set will be POSIX-compliant, but getting there will be somewhat painful. A lot of shell scripts, written for BSD or SYSV, will break using POSIX commands.

Some communications improvements planned for SR11 include support for FDDI and Slip ability to 19.2K baud. Printing support will include Xbitmap support and, I hope, an HP supported driver for the HP LaserJets. SR11 is planned to provide a base for OSF/DCE with transparent access to OSF and HP-UX. A global login and unified registry between OSF/1, Domain/OS and HP-UX is also possible.

Finally, SR11 will not *require* an **invol**, but to use the disk quota system and to take advantage of some disk organization improvements, you'll have to **invol**.

The current proposed ship date for SR11 is some time in the second half of 1991. And yes, that is very vague. Remember these listed items are just plans.

Freedom Of The Press

Occasionally, this column could also become a clearing house for political issues. One question worth consideration would be: What is the future of ADUS? What are its plans for which system users should belong (i.e., Domain/OS, OSF, HP-UX, Timeshare UNIX users)?

For my part, I feel an affinity with all UNIX and workstation users. Our needs and concerns are much the same, no matter what box we run on. This column will cover all issues related to the Apollo community or its future direction (OSF/1). The way I see it that community includes all HP customers currently using the Domain/OS or Aegis operating systems.

At any rate, it's nice to be able to use the Apollo name again without fear of correction. After all, this is my column.

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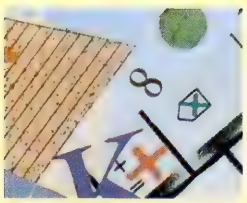

PC TIPS

Miles B. Kehoe

Conceived As An Alternative To MS-DOS, OS/2 Isn't For Everybody's Desk

OS/2 Overview

You've probably heard a lot about OS/2 lately. It seems everyone has been talking about who should use it and what its future may be.

Rather than waste time repeating what you've already heard, I'll discuss some of the technical details of OS/2, including how to use DOS and OS/2 on the same system and how to go about using MS-DOS from within your OS/2 session.

An Introduction To OS/2

IBM and Microsoft introduced OS/2 in 1988. At the time, it was marketed as a replacement for MS-DOS. It featured a command line interface similar to the familiar MS-DOS C> prompt and a similar batch control language. In fact, to provide compatibility to MS-DOS, OS/2 allowed a single DOS task to execute in 640 KB of memory. OS/2 also featured a program called Presentation Manager, which looked very much like Microsoft Windows.

Unlike MS-DOS, OS/2 was a multitasking operating environment. This meant it could perform more than one task at a time, with the operating system switching back and forth between tasks according to the priorities you set. OS/2 also offered a "multithreaded" environment. Any task could start other "child" tasks, or threads, which could then execute independently of the original "parent" task.

Both of these features provided power that just didn't exist before on PCs. However, as frequently happens with operating system enhancements, programmers loved the new capabilities, but users didn't perceive much benefit from them. In addition, OS/2 required a minimum of 2 MB of memory, so most users stayed with their old reliable MS-DOS systems.

A New Version

In 1989, IBM and Microsoft introduced OS/2 Version 1.2. This upgrade featured many of the same capabilities that earlier versions had, but it enabled users to run either OS/2 or MS-DOS on the same PC. Technically speaking, this had been possible with earlier releases, but it required

some risky hacking with boot sectors and other mysterious parts of the PC.

Version 1.2 also included some powerful extensions to OS/2 for database management and network communications. In fact, some of the most exciting new applications for OS/2 today are Microsoft's SQL Server, which is based on the Sybase relational database management system, and the Microsoft LAN Manager.

Windows Grows Up

Along the way from OS/2 Version 1.0 to today, a funny thing happened. Users told Microsoft and IBM that what they wanted was not a *new* operating system but more power and new functionality for their *existing* operating system. In an attempt to reach these users, Microsoft introduced Windows 3.0, which provided a semblance of multitasking under MS-DOS, and many other features.

Because it had similar memory requirements and functional capabilities to OS/2, most DOS users found Windows to be just what the doctor ordered. Consequently, OS/2 never did catch on as a replacement for DOS and now has to stand on its own merit. Luckily, there are some applications for which OS/2 makes a lot of sense.

For instance, OS/2 is better suited than DOS as the operating system for file servers and central database servers. With the right networking software, you can network several MS-DOS systems together with one or more OS/2 systems acting as file and printer servers. It was no coincidence that Microsoft introduced versions of LAN Manager and SQL Server for OS/2.

The Future Of OS/2?

Right now, the future of OS/2 is up in the air. Microsoft and IBM have agreed to continue development of OS/2, but Microsoft is working on tools to allow Windows 3.0 programs to work under Presentation Manager.

People who have a need for a LAN with MS-DOS systems will find OS/2 works great as a server. Large, fast disk drives are common under OS/2, and Microsoft is providing excellent capabilities with their new OS/2-based products.

In short, you may never see a day when OS/2 is on every desk, but you

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shouldn't be surprised to find it on every network.

A Technical Overview

OS/2 runs on Intel 80286- and Intel 80386/486-based PCs. (For all practical purposes, the Intel 80486 is identical to the 80386, so most people don't bother mentioning it except where the difference is important.)

Windows 3.0 running under MS-DOS can provide multitasking, but OS/2 provides a much higher degree of protection for each task.

To use OS/2 Version 1.2, you should have at least 2 MB of memory. If you're going to do any real processing at all, you should consider 4 MB as a minimum. You should also have at least an EGA monitor and a mouse.

Operating Modes

OS/2 can run in either of two operating modes: real mode, which emulates MS-DOS; and protected mode, in which various tasks are isolated from other tasks by the operating system.

OS/2 normally boots in real mode, and the first screen you see is Presentation Manager. From there, you can run applications, just as you would in Windows, by clicking on program icons — or browse through the file system using a File Manager application. If you've used Windows 3.0, you'll feel at home in Presentation Manager.

If you want to run an MS-DOS application within OS/2, the quickest way is to open the DOS Compatibility Task. This switches OS/2 into real mode, in which the system functions like MS-DOS 3.3. In real mode, your DOS applications are limited to a nominal 640 KB of mem-ory, although in fact you have no more than 550 KB of true memory space. No extended or expanded memory is available in this DOS compatibility environment.

Also, you can't load any device drivers you may need for MS-DOS under the DOS Compatibility Task. OS/2 executes the commands in an AUTOEXEC.BAT but won't look for a different CONFIG.-SYS. In fact, the applications that appear to be standard MS-DOS utilities, like CHKDSK and FORMAT, are actually OS/2 versions of those applications.

Dual-Boot Operation

OS/2 Version 1.2 allows you to easily specify that your system boot either MS-DOS or OS/2. Once you install OS/2, you'll start up in OS/2 and Presentation Manager. However, if you request a dual-boot installation, you can execute a special program that will set up your configuration files and then boot MS-DOS. Until you execute this special program again, your PC will boot in MS-DOS just as it always did. Of course, you can't run any OS/2 applications when you boot up in MS-DOS, but you can, thanks to OS/2, have access to all conventional and expanded or extended memory on your system.

The special utility program that switches the default operating system is called BOOT and resides in the C:\OS2 directory. You specify whether you want to boot DOS or OS2, and BOOT does the rest.

To manage this dual boot capability, your system actually has two different sets of CONFIG.SYS and AUTO-EXEC.BAT files. These are stored in the C:\OS2\SYSTEM directory as CON-FIG.OS2 or CONFIG.DOS; and AUTO-EXEC.OS2 and AUTOEXEC.DOS.

When you change the default operating system with BOOT, it copies the current CONFIG.SYS and AUTO-EXEC.BAT into the C:\OS2\SYSTEM directory, renaming them with either the DOS or OS/2 file extensions. Then, it copies the other configuration files into the root directory, giving them the file types of .SYS and .BAT respectively.

For example, if you're running OS/2 and request a switch to MS-DOS, the current configuration files in the root directory are moved to C:\OS2\SYSTEM and given the file type of .OS2.

Next, BOOT copies C:\OS2\-SYSTEM\CONFIG.DOS to the root directory and names it C:\CONFIG.SYS. It does the same with AUTOEXEC.DOS, giving it the file type of .BAT.

Having made these changes and set some information in the boot sector of your disk, your system reboots into MS-DOS. If you then want to switch back to OS/2, BOOT reverses the process.

The details of this process are only important to you if you want to make changes to either active configuration file. For example, if you are running OS/2 and want to change the CON-FIG.SYS, you should change the copy of the file in C:\. If you want to change the MS-DOS configuration file, you can edit:

```
C:\OS2\SYSTEM\CONFIG.DOS
```

Incidentally, when you are booting in MS-DOS, both configuration files work exactly as they do on a system with only MS-DOS. However, OS/2 uses the AUTOEXEC.BAT file only when you start the DOS Compatibility Task within OS/2.

This may explain why you have two different versions of AUTOEXEC. You may want certain Terminate-and-Stay-Resident (TSR) applications when you are running under true MS-DOS and other TSR applications (if any) when you are running the DOS Compatibility Task and have less memory to spare.

At the least, you will want to define

different PATH statements in the two different AUTOEXEC files. Under MS-DOS, your PATH should include the directory where your standard utilities, like CHKDSK and FORMAT, reside. Remember that in OS/2 under the DOS Compatibility Task, you actually execute OS/2 versions of these utilities that won't work when running under real MS-DOS.

I also use the different AUTOEXEC files to define different command prompts, so I'm always reminded which is my native operating mode at the moment: This isn't always easy to remember because the MS-DOS and the DOS Compatibility Task look so similar.

File Systems

One nice feature of OS/2, which I hinted at earlier, is a new file system called the High Performance Filing System, or HPFS. When you install OS/2, you can decide whether to use HPFS on one or more of your disk partitions to provide greater speed for file operations.

The alternative to HPFS is an MS-DOS-compatible file system called a File Allocation Table (FAT). MS-DOS can read and write FAT disks only, so if you'll be using the dual-boot capability of OS/2, be sure to have at least one partition of your disk use the FAT file system.

In fact, you may want to consider keeping a reasonably large MS-DOS partition as drive C. You may find you want to copy data files between OS/2 and MS-DOS, and this FAT partition will be the only way to do so. The partition should have enough free space to hold the largest data file you may want to share between the two environments.

You'll also find it easier to repair any minor (or major) disk problems if you can boot MS-DOS. Although you can start OS/2 from the master installation disk, then break out into a command window, it's more difficult than doing the same thing from a spare MS-DOS system disk.

This trick of maintaining C: as a FAT partition has saved me hours of time. Reconfiguring your system because minor changes to the OS/2 CONFIG.SYS file render it unable to boot can be very frustrating. Because I can boot my system with a spare MS-DOS disk, I can change the OS/2 CONFIG.SYS to fix a problem, and reboot again quickly.

Multitasking, Multithreaded

Multitasking and multithreaded aren't always well understood concepts. Multitasking means running multiple programs at the same time. Each program performs a single task at any time much like conventional MS-DOS applications. Windows 3.0 running under MS-DOS can provide multitasking as well, but OS/2 provides a much higher degree of protection for each task.

When you're running several programs under Windows, a major error in any of those programs can cause the entire system to hang up or crash. In OS/2, each program is protected from other active programs, and a fatal error in any of them is less likely to bring down the entire system.

OS/2 is also a multithreaded operating environment, which is a bit more difficult to explain. When a developer is working on an application for an environment, the capabilities of the environment determine how certain features must be implemented. In Windows applications, as with non-Windows MS-DOS applications, each application can only perform one task at a time. These tasks are performed sequentially, regardless of whether subsequent tasks require completion of an earlier task.

Of course, an application can start another application in OS/2 as in Windows. However, several smaller tasks can be initiated from an OS/2 parent application such that each task will execute independently of the others and of the parent. This allows you to perform a sort in one thread, for example, while another thread accepts user input. The developer sees an easier and more modular implementation, and the user sees better performance. *—Miles B. Kehoe is an online support manager for Verity Inc., Mountain View, CA.*

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FIELD SERVICE

Ron Levine

At Your Service

In our economic system, there are rare occasions when small businesses can compete with large manufacturers. Often, these smaller companies incorporate features or pricing not offered by the giants. Field service is no exception.

During the 1980s, third-party (independent) maintenance vendors (TPMs) mushroomed to take about 10 percent of the service market's revenues. While the TPM onslaught has been considerable on an industry-wide basis (most notable in the IBM and DEC sectors), it has not been a major force in the HP world. There are many reasons for this: The HP market is much smaller, HP customers seem generally satisfied with OEM service, and there are a limited number of third-party add-ons to HP equipment and fewer multivendor connections than with other systems (strong selling points for TPM services).

As one independent put it, "HP gives us access to parts and support for their printers and plotters, so we service them. But, they have made it clear they don't want us in their systems services business. And to be honest, it's not worth hassling with them over this small market — we can do better sticking with IBM and DEC systems service."

But, there are independent companies who provide service and support for HP systems. True, they're not the size of the Bell Atlantics, TRWs, MainTechs, or other national service vendors who fight for IBM and DEC service accounts. But if you're located in their territory and have the type of equipment these smaller independents support, you may be able to save a bundle on maintenance costs.

TPMs have forced the equipment manufacturers to be more flexible in their service offerings, more responsive to customer needs, and more competitively priced.

Independent Service

According to the Labor Department, data processing equipment service and repair is now one of the top growth professions in the country. As you might expect, many capable organizations have entered the field and many more are "jumping in." The OEM, then, is no longer your only service option. You can choose the OEM or an independent, or a combination of both to fill your service/maintenance requirements.

TPMs have gained acceptance over the last few years by providing quality service. Last year, TPMs grossed slightly under $2 billion. I equate these service vendors with the independent garages in the automobile industry that compete against the dealer's service departments. They provide maintenance on many brands and types of equipment, yet many are factory-trained, use OEM parts and provide excellent support at comparable or lower prices than the dealers.

By providing alternatives, TPMs have forced the equipment manufacturers to be more flexible in their service offerings, more responsive to customer needs, and more competitively priced. The manufacturers also have "beefed up" their own service programs, reacting to a major revenue source under attack.

TPMs in the "HP world" claim they offer two advantages over OEM service. First, with a small TPM, the customer has closer ties with the person doing the actual servicing, rather than working through an account rep or dispatcher. Second, most TPMs discount service charges between 25 to 45 percent off of Hewlett-Packard list prices, for the same level of service.

Who And Where Are TPMs?

Most TPMs are small, concentrate on a local geographical area, and support specific systems or devices. But they do provide full support of the equipment they handle. And, if you can take advantage of their offerings, you'll save on maintenance costs. You also gain the advantage of dealing with a local company, often working with their top executives.

The "Service Vendors" box offers a small sampling of service vendors offering maintenance for Hewlett-Packard systems. The list is by no means exhaustive. Many excellent maintenance companies exist in local areas and regions scattered throughout the country. You may be able to locate additional vendors by looking under the "Computer Service & Repair" heading in your local yellow pages, or by purchasing a computerized listing of service and maintenance companies (such as Service Sourcery, Too, published by Coordinated Service Inc.)

[Service Vendors]

This is a sample of the services provided by third-party maintenance companies. It is not intended to be a comprehensive list of HP service vendors, and inclusion here does not constitute an endorsement from *HP Professional*.

Advant Computer Exchange

Services Offered: On-site maintenance, depot repair, remote troubleshooting/diagnostics assistance, and some system reconditioning.
Types of Equipment Serviced: HP 1000, HP 3000, HP 9000, and all HP peripherals and most third-party add-ons.
Markets Served: Most areas of California.
Pricing: Service contracts or time and materials. Charges are generally 50 percent off of HP's list for classic systems and 30 percent off of HP's list for RISC systems.
Comments: Response times are customized per user account and range from two hours to next day service; standard service day is Monday to Friday, 8 a.m. to 5 p.m.

Contact Ron Reimert, Advant Computer Exchange, 42285 Osgood Rd., Suite G, Freemont, CA 94539; (800) 824-8418.

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Atlantic Tech Service

Services Offered: On-site maintenance, depot repair, remote troubleshooting/diagnostics assistance, system reconditioning.
Types of Equipment Serviced: Classic HP 3000, HP 1000, all HP peripherals and selected third-party add-ons.
Markets Served: East Coast and selected cities; Los Angeles, Dallas, Houston, Cleveland, Chicago, and others.
Pricing: Service contracts or time and materials. Standard charges are 25 to 40 percent off HP's list.
Comments: Standard response time is within four hours; standard service day is Monday to Friday, 8 a.m. to 5 p.m.

Contact David Mason, ATS, 18950 Bonanza Way, Gaithersburg, MD 20879; (800) 446-7399.

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Services Offered: On-site maintenance, depot repair, remote troubleshooting/diagnostics assistance, system reconditioning, training.
Types of Equipment Serviced: HP 3000, HP 1000, all HP peripherals and selected third-party add-ons, PCs.
Markets Served: Service is provided in Washington state only.
Pricing: Standard charges are 25 to 30 percent off of HP's list.
Comments: Standard response time is contracted at four hours (but typical response time is within one hour); standard service day is Monday to Friday, 8 a.m. to 9 p.m.

Contact Paul Allen, Computech Systems Corp., 2721 152nd Ave., Northeast Redmond, WA 98052; (800) 882-0201 or (206) 883-4107.

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Computer Solutions Inc.

Services Offered: On-site maintenance, depot repair.
Types of Equipment Serviced: HP 3000 classic, HP 1000 systems and all HP peripherals.
Markets Served: New York metro area and parts of PA.
Pricing: Overall 10 to 12 percent off of HP's list; some equipment as much as 45 percent less than HP's list.
Comments: Same day or next day service (response time is within five hours if called before 1 p.m.); standard service day is Monday to Friday, 9 a.m. 5 p.m.

Contact Garry Heath, Computer Solutions, 397 Park Ave., Orange, NJ 07050; (201) 672-6000.

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Comments: Response times offered are from four hours to next day service; standard service day is Monday to Friday, 8 a.m. to 9 p.m.

Contact Bill Green, CONAM Computer Care, 546 N. Oak St., Inglewood, CA 90302; (213) 419-2200.

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Markets Served: Northern California.
Pricing: Service contracts or time and materials. Standard charges are 40 percent off HP's list.
Comments: Standard response time is within four hours; standard service day is Monday to Friday, 8 a.m. to 5 p.m.

Contact Ed Leers, Ideal Computer Service, Inc., 113 Rickenbacker Circle, Livermore, CA 94550; (415) 447-4747.

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CIRCLE 243 ON READER CARD

NETWORKING

Gordon McLachlan

TCP/IP Vs. ISO

According to an ancient Saudi legend, there are three things you can do when a camel gets into your tent: Roll over and hope the camel doesn't snore, kick the camel out, or move your tent. Well, the TCP/IP camel got its nose in the tent and has decided to move right on in. Roll over, buddy.

Not too long ago, the conventional wisdom was that TCP/IP was a temporary solution, soon to be supplanted by real standards. Fat chance, folks. Industry prognosticators now are looking to the millennium before they see ISO standard networks really coming of age in the U.S.

What happened? For one thing, somewhere along the line TCP/IP became respectable. Maybe we should've seen it coming. Once corporate America started to gobble up those TCP/IP goodies and dress them in gray pinstripes, they were here to stay.

Pragmatism Run Amok?

In the U.S., pragmatism wins out over idealism any day, and as far as the U.S. market is concerned ISO is like the metric system: A fine idea for them foreigners, but we don't need it. Why throw out a bunch of perfectly good rulers and wrenches? Likewise, if you've got a bunch of nice routers and bridges that work just fine, why mess with success?

Granted, this is a pretty provincial point of view, but then we have a pretty big province. International standards are important internationally, but national standards are good enough for us.

In Europe, the big data networks are controlled by the national governments. The U.S. has a much larger base of private nets to deal with. This means that market forces have a greater effect on what we do with our networks than does legislative fiat. We can install whatever our little hearts desire to spend money on. Unless you have to sell stuff to the government or get on their networks, it doesn't matter what you put in.

Does this mean we can forget about ISO? Not really. It just means that we can put it off a bit. Basically, using TCP/IP is becoming a no-brainer, if only because of the sheer volume of stuff available in the marketplace. When ISO becomes a no-brainer, it, too, will have a following.

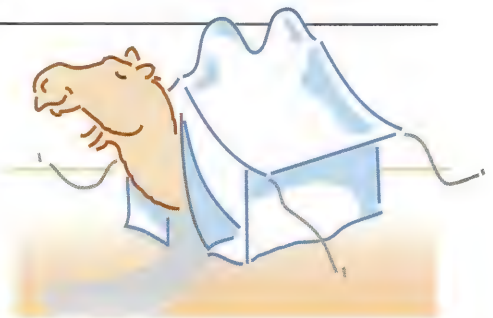
Network GOSIP

This is the philosophy that can be found in the Government OSI Profile (GOSIP), which specifies how ISO-compliant new government computer systems have to be. GOSIP, which went into effect in 1990, is supposed to allow for a smooth transition from TCP/IP networks, which have been the U.S. standard, to ISO.

Because it has to accommodate the huge installed base of TCP/IP networks, the first drafts of GOSIP absolutely had to specify the use of ISO-standard upper layers on top of TCP/IP. There was no other way, short of ripping out all the old stuff and throwing it away.

Of course, the goal of GOSIP is still ISO standard networks. GOSIP has just pointed out that there will be some intermediate stops along the way. Running Virtual Terminal, X.400 E-Mail and X.500 Directory Services on top of TCP/IP is now officially acceptable (and required) behavior in government circles.

This is not a bad thing. The biggest bang for the buck comes from the upper layers of the ISO/OSI model anyway. All we really want to do is transfer our files, use E-mail and play with our virtual terminals. If we can get that stuff to run on top of TCP/IP, why mess with the rest of ISO? TCP/IP works and everybody has it. Why invent problems by chasing standards?



Why, indeed. If it ain't broke, don't fix it. Right? Well TCP/IP does have some problems that need to be fixed. We still have to move onward and upward. It's just that the timetable has slipped a little. If we look at what ISO applications over TCP/IP still lack, we'll get a little better idea of what the migration path looks like.

For one thing, IP is going to run out of address space. When the Internet Protocol was first developed, nobody had any idea how many individual networks were going to be out there. Accordingly, there just aren't enough bits in the IP address to accommodate everybody forever. IP will handle about two million networks, but because of the way that IP addresses are set up, only about 16,500 of those networks can have more than 254 computers in them.

Because polite internetworking requires that every network be assigned a unique range of addresses, this could be quite a problem. It's kind of like the telephone company running out of phone numbers. ISO internetworking standards under development will address (groan) this issue much better than IP does. Consequently, you can expect that a switch to ISO network addressing will have to be incorporated into the IP layer of TCP/IP. This will be a big step toward

getting into compliance with the ISO standards.

That Bothersome Sidestitch

Another area of concern is network management. Once again, while the ISO folks were wrangling over the standards, we slipped another camel into the tent: the Simple Network Management Protocol (SNMP). SNMP is another one of those stop-gap solutions that went wild, and it has infiltrated TCP/IP like a virus on the Internet.

SNMP is a bit clumsy in that it requires network management servers to waste a fair amount of energy and network bandwidth to actively monitor all of the nodes on a network. SNMP doesn't just listen for your breathing and heartbeat, it has to poke you in the ribs every once in a while to see if you're dead, or just sleeping.

Needless to say, that's not the ideal method for doing things, especially on a slow leased line to Paraguay. Accordingly, ISO has developed its own network management technology, the Computer Management Information Protocol (CMIP). As happens with such standards, however, it was a day late and a dollar (or deutsche mark, pound or franc) short. While they were thinking about it, we were doing it. So there.

Now, there's a version of CMIP called CMOT, or Computer Management Over TCP/IP. Guess what that's here for. With any luck, CMOT, when it's available, should be able to slide right into a TCP/IP network, nudging it even closer to the ISO camp.

An American Original

What about all the vendor talk? How about all that real ISO standard stuff they're yipping about? Take it with a grain of salt.

Always remember that TCP/IP is a uniquely American aberration. The Europeans want international standards, not our stuff. Any computer company that wants to compete internationally has to play their game. They have to offer the official ISO stuff as well.

If all of our vendors played in the international market, there would be no problem. But they don't. The U.S. market is big enough and isolated enough that we can set our own rules. We still have the latitude to do things our way.

We also run into problems because the technology won't wait for the standards. X.25 is starting to show its age. It isn't designed to connect different networks together, and it's preoccupied with error detection and correction that isn't needed on the reliable data facilities we have in this country. Here, the movement is on toward gigabit-speed leased lines and frame relay technology, which really speeds up network traffic on busy internetworks. It will take a while for those things to become ISO standards.

Another issue is just how far we're willing to bend toward the European perspective in certain areas of the standards, particularly security.

The European Community is really sensitive about security and encryption. Because they'll have open economic borders, a lot of data will pass between countries and the national networks. To avoid having this information glommed by the wrong eyeballs, they want big-time security and encryption built into hardware, software and networks.

The U.S. vendors have some problems with this. Our vendors aren't crazy about the idea, because it will make them fool around with their equipment and software in ways they don't want to. They think a lot of the standards are just a way of keeping American iron out of the EC market. Also, the spooks at the National Security Agency who listen to your long-distance phone calls and tap your data lines, don't want your data too secure. If the NSA can't break your encryption, they don't want you to use it.

Are you starting to think that going from TCP/IP to ISO is like trying to turn a Chevy into a BMW one piece at a time? If you are, you're catching on. It's more than just picking which wrench to use.—*Gordon McLachlan is a consultant with National Tech Team in Dearborn, MI.*

Would you like to continue to see articles on this topic?
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NEW PRODUCTS

Exabyte Announces High-Speed Search

Exabyte Corp. announced a high-speed search that enhances the performance of the EXB-8200 8mm Cartridge Tape Subsystem.

Exabyte also increased the mean time between failures of all models of the EXB-8200 by more than 30 percent to 40,000 hours. The increase was based on reliability data collected on more than 150,000 units in the field.

The high-speed search functionality on the EXB-8200 allows the host to locate a predefined position on tape quickly. Searching over half of a 2.5-GB tape with an average access time of 85 seconds, the EXB-8200 now achieves high-speed search at speeds up to 15 MB per second.

OEM quantity pricing of the EXB-8200 with high-speed search is $1,665. High-speed search upgrades to existing EXB-8200s will be available in June 1991.

Contact Exabyte Corp., 1685 38th St., Boulder, CO 80301; (303) 442-4333.

Circle 400 on reader card

Applied Reasoning Brings MS-DOS To X Windows

Applied Reasoning Corp. announced three new product offerings that execute DOS applications on X Windows workstations.

The Applied Reasoning products include UNIX support for Microsoft Windows 3.0 and VCPI DOS Extenders and an X Windows interface to DOS applications. All three products enhance the Applied Reasoning PC-ELEVATOR 386-compatibility product line.

Applied Reasoning's PC-ELEVATOR 386 is an expansion board that puts the power of an Intel 80386 in a UNIX workstation window. It supports all PC graphics standards in a resizable window. UNIX access allows for support of all workstation peripherals such as mouse, keyboard, floppy, hard disk and network communications.

The PC-ELEVATOR with 1 MB of 32-bit RAM is priced at $1,990.

Contact Applied Reasoning Corp., 86A Sherman St., Cambridge, MA 02140; (617) 492-0700.

Circle 399 on reader card

HP 3000, 9000 Support Series 6300 Model 20GB/A

HP announced its plans to support the HP Series 6300 Model 20GB/A rewritable optical disk library system on HP 9000 Series 800 and HP 3000 Model 900 computer systems.

The company also announced a rack-mount option for the Model 20GB/A library system. Two Model 20GB/A systems can be configured horizontally in a standard rack for 41.6 GB of storage capacity.

HP 3000 Model 900 customers using the HP MPE XL 3.0 operating system will be able to streamline backup operations using the Model 20GB/A optical library and HP TurboSTORE/XL II backup software.

To manage large amounts of infrequently used data online, HP 9000 Series 800 customers will be able to use the storage capacity of the Model 20GB/A with the 8.0 release of the HP-UX operating system.

The HP Series 6300 Model 20GB/A library system holds up to 32 rewritable 5 1/4-inch optical disks that conform to standards proposed by ANSI and ISO. It has two rewritable optical-disk drives and an HP-designed autochanger. Prices range from $36,000 to $84,000.

New Windowing Technology With Speedware Version 6.0

Infocentre Corp. introduced its new windowing technology which will become available with the release of Speedware Version 6.0. Infocentre's Windowing System, which will operate on both pull-down and split screens, supports colors, line drawing, function keys and mouse control.

By providing PC-based functionality on standard ASCII terminals, Infocentre's Windowing System will allow organizations using Speedware Version 6.0 to benefit from the new windowing technology without having to invest in a series of PCs. Applications developed on one terminal will look and feel exactly the same on a variety of terminal types.

This consistency will extend across

HP's new Model 20GB/A rewritable optical disk library system.

different operating platforms. The Windowing System will operate on MPE XL and MPE V on standard terminals and on PCs under MS-DOS and OS/2. The system is character based, and requires no special hardware or software to implement.
Contact Infocentre Corp., 7420 Airport Rd., Ste. 201, Mississauga, ON L4T 4E5; (416) 678-1841.

Circle 398 on reader card

HP Introduces Multifunction Optical Disk Drive

HP announced the HP C1716M, a multifunction optical disk drive. The product allows OEMs, resellers and system integrators to use a single mechanism for write-once and rewritable-optical-subsystem or library applications. HP is also scheduled to provide the multifunction optical capability in its 20-GB optical disk library.

The write-once format used in the HP multifunction optical-disk drive is based on the rewritable continuous-composite magneto-optical format, which is in the final stage of approval before the International Standards Organization (ISO). Eighteen companies are cooperating to establish this write-once format as a standard with U.S. and international standards organizations.

The HP C1716M is a 5 1/4-inch form-factor, multifunction magneto-optical drive mechanism with a small-computer-systems interface (SCSI) controller.

The list price for drive and controller is $4,300. Write-once media is $199; rewritable media is $249.

Ingres/Windows 4GL On Four New UNIX Platforms

Ingres Corp. announced the availability of Ingres/Windows 4GL on four new UNIX-based computer platforms. Customers can use the product on HP-UX, IBM's RISC System/6000, DEC's ULTRIX and ULTRIX/SQL, and SCO's Open Desktop.

Ingres/Windows 4GL is a visual programming tool and fourth-generation language development system that uses a point-and-click Macintosh-like graphical user interface to accelerate the creation of software applications on workstations.

Ingres/Windows 4GL is available for 50 percent of the Ingres base product price, which varies depending on the size and configuration of the user installation. For a typical configuration of two to eight workstation nodes, Ingres/Windows 4GL is approximately $1,400 per node.
Contact Ingres Corp., 1080 Marina Village Pkwy., Alameda, CA 94501; (415) 769-1400.

Circle 397 on reader card

OPEN LOOK GUI Gains Asian Capability

Melillo Consulting Inc. announced the release of an Internationalized AT&T OPEN LOOK 2.0+ Graphical User Interface and Toolkit for HP 9000 Series 300, 400 and 800 computers. The product, called OPEN LOOK/NLS 2.0+ GUI (NLS stands for Native Language Support), runs on UNIX.

The software allows the display of locale-specific text and bit-mapped fonts, including the input and display of Asian "multibyte" character sets. OPEN LOOK/NLS 2.0+ GUI uses established Asian input methods from HP's Native Language Input/Output product, which has been adopted as the basis for the X/Open Portability Guide Issue 3 to aid in data entry for Asian languages.
Contact Melillo Consulting Inc., 15 Clyde Rd., Ste. 201, Somerset, NJ 08873; (201) 873-0075.

Circle 392 on reader card

Memory Array Board For HP 1000 Expands To 32 MB

Herstal Automation Ltd. announced the availability of a new 32-MB memory array board for use on HP 1000 A series computers. The memory array board, expandable to 32 MB by design, allows full A series system capacity, using a single chassis slot.

The new memory boards carry a 10-year, overnight replacement warranty and are available on a two-week delivery.
Contact Herstal Automation Ltd., 3171 W. Twelve Mile Rd., Berkley, MI 48072; (313) 548-2001.

Circle 396 on reader card

Ontologic Upgrades ONTOS

Ontologic Inc. introduced ONTOS Release 2.0, an upgrade of its second generation object-oriented database product, ONTOS.

The upgrade offers features that extend the capabilities of ONTOS, an object-oriented DBMS designed for interactive, network-based, data-intensive applications.

ONTOS R2.0 is available on multiple platforms including Apollo, Sun 3, Sun 4/SPARC, DEC Station and OS/2. It offers full support for multiple inheritance and C++ R2.0, as well as full data distribution across LANs. Specialized transaction support for design applications has been further advanced with the new release.
Contact Ontologic Inc., Three Burlington Woods, Burlington, MA 01803; (617) 272-7110.

Circle 394 on reader card

Graphicus Products Run On HP 9000 Series 400

Graphicus Inc. announced support for its Grafit, Drawit, Statit and Graphicus Q+ products on HP 9000 Series 400 computers running HP-UX. Graphicus' products support graphics output in X Windows environments, as well as a variety of terminals, plotters and printers.

Graphicus also supports products for the HP 9000 Series 300 and 800, HP 1000 A series computers and Sun SPARCstations.

Grafit, Drawit, Graphicus Q+ and Statit systems are technical graphics and data analysis systems used in manufacturing and engineering. Applications for the Graphicus' products include statistical quality control, engineering data analysis, presentation graphics and technical illustration.
Contact Graphicus Inc., 150 Lake St. S., Ste. 206, Kirkland, WA 98033; (206) 828-4691.

Circle 388 on reader card

Pinnacle Micro Offers Optical Abilities

Pinnacle Micro Inc. introduced REO-650, a single drive, SCSI system capable of storing up to 650 MB of data on one cartridge. The REO-1300 adds a second drive, with 1.3 GB of mass storage.

Personality Adapter Kits are available for the following workstations: Macintosh, Sun 3, 4 and 386i SPARCstations; HP; IBM PCs, PS/2 and compatibles; and DEC Q-bus and Unibus systems. Software provided with the interface kits supports a host of working environments, including UNIX, XENIX, A/UX, Novell Netware and more.

The REO-650 single drive system lists for $4,695. The REO-1300 dual drive system lists for $8,995. Interface kits sell from $495 each and must be purchased with a drive. media discs are priced at $250 each.

Contact Pinnacle Micro Inc., 15265 Alton Pkwy, Irvine, CA 92718; (800) 553-7070, (714) 727-3300.

Circle 393 on reader card

HP Debuts Two OSI Tools

HP introduced two application programming interface (API) tools to help software developers integrate applications with Electronic Data Interchange (EDI) translation, Office Document Architecture (ODA) formats and real-time, factory-automation communications.

HP also has begun shipments of directory products for enterprise-wide networks. HP X.500 software gives users standards-based access to directories of names, objects and data. HP also announced that seven independent software vendors (ISVs) will develop integrated software applications using new development tools and other services from HP's OSI program.

Visix Software Enhances Looking Glass

Visix Software Inc. announced Looking Glass Version 2, an upgrade of the graphical user environment for UNIX workstations and X terminals.

Looking Glass Version 2 provides several features and enhancements, including a graphical Tree View for file system navigation; a hypertext help system; named work areas so users are able to name, save and restore workspace layouts; and a Command Line window so users can edit and submit commands to a shell directly from Looking Glass.

Looking Glass Version 2 also offers colorable icons, positionable icons and names in file and directory views, file typing language extensions and icon editor enhancements. It is available on HP, Sun, DEC and other platforms.

Contact Visix Software Inc., 11440 Commerce Park Dr., Reston, VA 22091; (703) 758-8230.

Circle 389 on reader card

Informix Ships Wingz For Apollos

Informix Software Inc. is shipping Wingz for HP's Apollo family of workstations. This version of Wingz is based on the industry standard X Window System and the OSF/Motif graphical user interface.

Wingz for the Apollo workstations supports a one billion cell matrix and has charting and graphing capabilities that rival software developed for high-end engineering applications.

Wingz supports the 680X0-based Apollo Series 2500, 3000, 3500, 4000 and 4500 personal workstations and the new Apollo 9000 Series 400 personal workstation running Apollo Domain/OS SR 10.2. Informix also plans to make Wingz available on HP-UX.

At the core of Wingz is HyperScript, an English-like graphical programming language. HyperScript allows decision support applications and Executive Information Systems (EIS) to be easily created for HP Apollo workstations. Wingz is priced at $699. Contact Informix Software Inc., 4100 Bohannon Dr., Menlo Park, CA 94025; (415) 926-6300.

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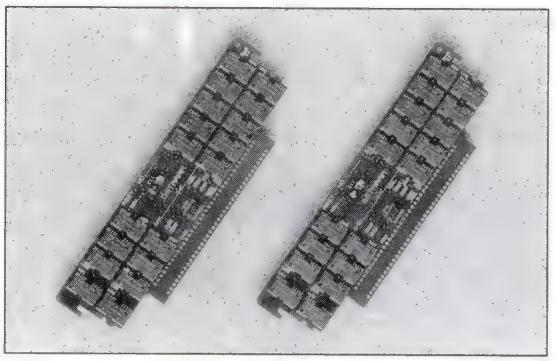

Dataram's DR-9400 memory upgrades for HP workstations.

Off-Site Offers 4-SITE For Disasters

Off-Site Inc. announced a PC-based software product as an adjunct to its Disaster Recovery Contingency Planning business.

The software, 4-SITE, is designed to be used as a standalone product or in conjunction with existing disaster recovery planning tools. 4-SITE incorporates online reporting, windows, and many help features to aid in the ease of operation.

Contact Off-Site Inc., 32 Ellicott St. Batavia, NY 14020;(716) 343-9775.

Circle 395 on reader card

Expansion Upgrade For HP 9000 Models 345/375/380

Dataram Corp. introduced the DR-9400, an expansion upgrade for HP 9000 Models 345, 375, 380 and several 400 Series workstations.

The memory upgrade is actually a kit consisting of two boards that work in tandem to expand memory capacity. It is available in four versions, including 4, 8, 16, and 32 MB. One version enables the HP 9000 345 workstation to operate at its maximum potential of 16 MB, up from the standard 4 MB capacity available from HP. Another boosts the capacity of Models 375, 380 and several of the 400 Series from the standard 8 MB to a full 128 MB.

This expanded capacity allows the workstations to handle more complex graphics applications.

The cost of the 4-MB version is $1,875; the 8-MB version is $3,750; the 16-MB version is $5,950 and the 32-MB version is $9,900.

Contact Dataram Corp., P.O. Box 7528, Princeton, NJ 08543-7528; (609) 799-0071.

Circle 391 on reader card

PROBE/X Provides Critical Information

Strategic Software Group Ltd. announced PROBE/X, a version of its performance monitoring tool for use on System 5 releases of UNIX.

With global, process, I/O and other system information, PROBE/X provides critical information on such items as CPU Utilization, Memory Utilization and Disk Utilization, as well as network performance information. Statistics can be displayed or logged for CPU, memory and I/O metrics on a global, process or device-specific basis. A presentation-quality trend analysis module is available for reporting logged data for time periods and subsets defined by the user.

Strategic Systems has targeted the IBM RS/6000, DEC Station and HP-UX platforms for its initial release of the product. Contact Strategic Software Group Ltd., 11050 5th Ave. N.E., Seattle, WA 98125; (206) 362-2231.

Circle 387 on reader card

Environment Manager Controls Information

Sotas International Inc. announced Environment Manager, a series of software modules that provide seamless integration of the Accountable Solutions product line and manage the entire application environment.

Environment Manager provides the ability to control the information each user of the system is allowed to see, improves the speed with which data is accessed and facilitates integration of applications to meet changing business conditions.

Environment Manager features a security module, a "Hot Link Inquiry," and a "Query" module. Accountable Solutions includes General Ledger, Accounts Payable, Accounts Receivable, Purchase Order, Inventory Management, Fixed Assets, Payroll, Personnel and Human Resources.

The cost of the complete package ranges from $7,500 to $50,000 according to the variety of configurations and service/support arrangements required.

Contact Sotas International, 192 Merrimack St., Haverhill, MA 01830; (508) 372-0770.

Circle 383 on reader card

PADEMU/9000 Release 3.0 Connects HP9000s

HERMES SoftLab announced Release 3.0 of PADEMU/9000, which connects HP 9000 systems to HP and non-HP computers through an X.25 network.

The new release implements CCITT's 1984 PAD-related recommendations including multilingual support. The new product also implements a client-server model, thus allowing outgoing connections to be performed via the LAN servers.

PADEMU/9000 release 3.0 offers new features includng device file support with special lines dedicated to standard UNIX utilities like **uucp, cu, lp** and others. An OSF/Motif compliant user interface is available for workstation users.

Contact Solution Centers International, P.O. Box 442, Placerville, CA 95667; (800) 622-0630 or (916) 622-0630.

Circle 382 on reader card

Epoch's 'Enterprise' Enables Automatic Migration

Epoch Systems announced the Epoch-1 Enterprise Storage Server that enables the automatic migration of data between rewritable optical jukeboxes and WORM optical jukeboxes.

The Enterprise expands the hierarchy of storage for users that prefer to store medium-term data on flexible, rewritable optical media and long-term archival data on lower cost,

The Epoch-1 Storage Server enables the automatic migration of data between rewritable optical jukeboxes and WORM optical jukeboxes.

permanent WORM optical media.

The Enterprise can be configured as one or more file systems supporting 360 GB to 1,000 GB of online storage. The base configuration includes three 760 MB magnetic disks, a 2.3-GB 8 mm cartridge tape drive, 16 MB of memory, a 5 1/4-inch 30-GB rewritable optical disk library unit and a 12-inch 330-GB WORM optical disk library. Expansion options include an additional rewritable or WORM unit, up to four additional magnetic disks and an additional 8 MB of memory.

The Epoch-1 Enterprise pricing starts at $360,000.

Contact Epoch Systems Inc., 8 Technology Dr., Westborough, MA 01581-1796.

Circle 384 on reader card

Digital Products Announces PrintDirector Plus

Digital Products Inc. introduced PrintDirector Plus (+), a new version of its PrintDirector peripheral sharing product that features twice the throughput speed of the original PrintDirector along with several other enhancements, including a "Plug N' Print" installation feature.

When printing graphic programs to a laser printer, PrintDirector + has a throughput of 5000 cps. The Plug N' Print installation feature allows a user who only wants to share one printer among several PCs to be up and running in minutes by just plugging in the appropriate cabling. Users are not required to run any installation software.

Other features include an enhanced diagnostic program; DOCTOR, which locates and helps solve installation and operational problems including cabling; and a new maximum of 4 MB of buffer on all models.

Base models of PrintDirector +, which come with 256 KB of buffer, are being offered at the same price as the original PrintDirector: $695 for the six-port model, $995 for the 10-port model and $1,895 for the 16-port model.

Contact Digital Products Inc., 108 Water St., Watertown, MA 02172; (617) 924-1680.

Circle 385 on reader card

SDI's Access Control Modules Secure HP Systems

Security Dynamics Inc. announced its entry into the HP marketplace with the release of software access control modules (ACMs) that protect HP 3000 and 9000 series computers.

Each offering controls access to a specific HP computing environment: The ACM/9600 protects HP 9000 systems running HP-UX, and the ACM/9700 and ACM/9800 secure HP 3000 computers running the MPE XL and V operating systems, respectively.

These ACMs also are used in conjunction with SDI's SecurID Card, a credit card-sized token carried by authorized users requiring access to the protected computer. Both the access control modules and the SecurID Card employ a patented proprietary technology, which produces a one-time, unique, unpredictable access code that automatically changes every 60 seconds.

Contact Security Dynamics Inc., One Alewife Center, Cambridge, MA 02140-2312; (617) 547-7820.

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Note: *For more information about HP products, contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.*

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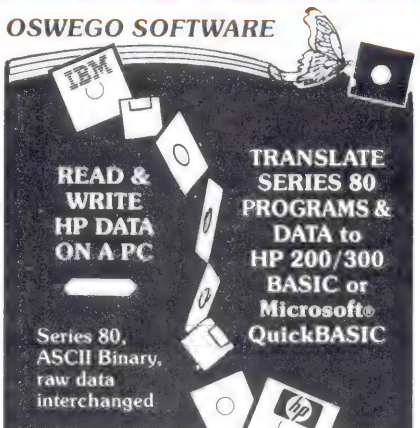

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[CALENDAR]

[MARCH]

3/18-20: The Sixth International Conference on Multimedia and CD-ROM has been rescheduled and will be held at the San Jose Convention Center, San Jose, CA. Call (203) 964-8287.

3/26-28: The National Database Exposition and Conference (DB/EXPO) will be held at the Moscone Convention Center, San Francisco, CA. Call (800) 2-DB-EXPO or (415) 941-8440.

[APRIL]

4/22-25: The 12th Annual Conference and Exposition sponsored by NCGA will be held at McCormick Place North, Chicago, IL. Contact Sharon Sutton, (703) 698-9600.

4/29-30: NOWRUG's Annual Conference will be held at the Washington State Convention and Trade Center in Seattle, WA. Call 965-1560.

[MAY]

5/8-10: DesCon will sponsor The Twelfth International Computer Management Show for the Design And Construction Industry, (A/E/C Systems '91). Washington Convention Center, Washington, DC. Call Sharon Price, (800) 451-1196.

5/13-16: The Fifth HP User Group Conference for the South Pacific and Asian region will be held in Melbourne, Australia. Conference theme is "Riding The NewWave." Contact Mandy Bromilow (613) 429-4322.

[JUNE]

6/11-14: NECRUG will hold its Twelfth Annual Eastern American HP Users Conference at Trop World Hotel and Casino in Atlantic City, NJ. Call Randy Kauftheil, (215) 251-0736.

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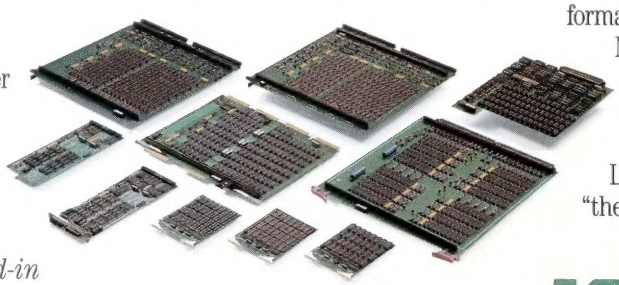

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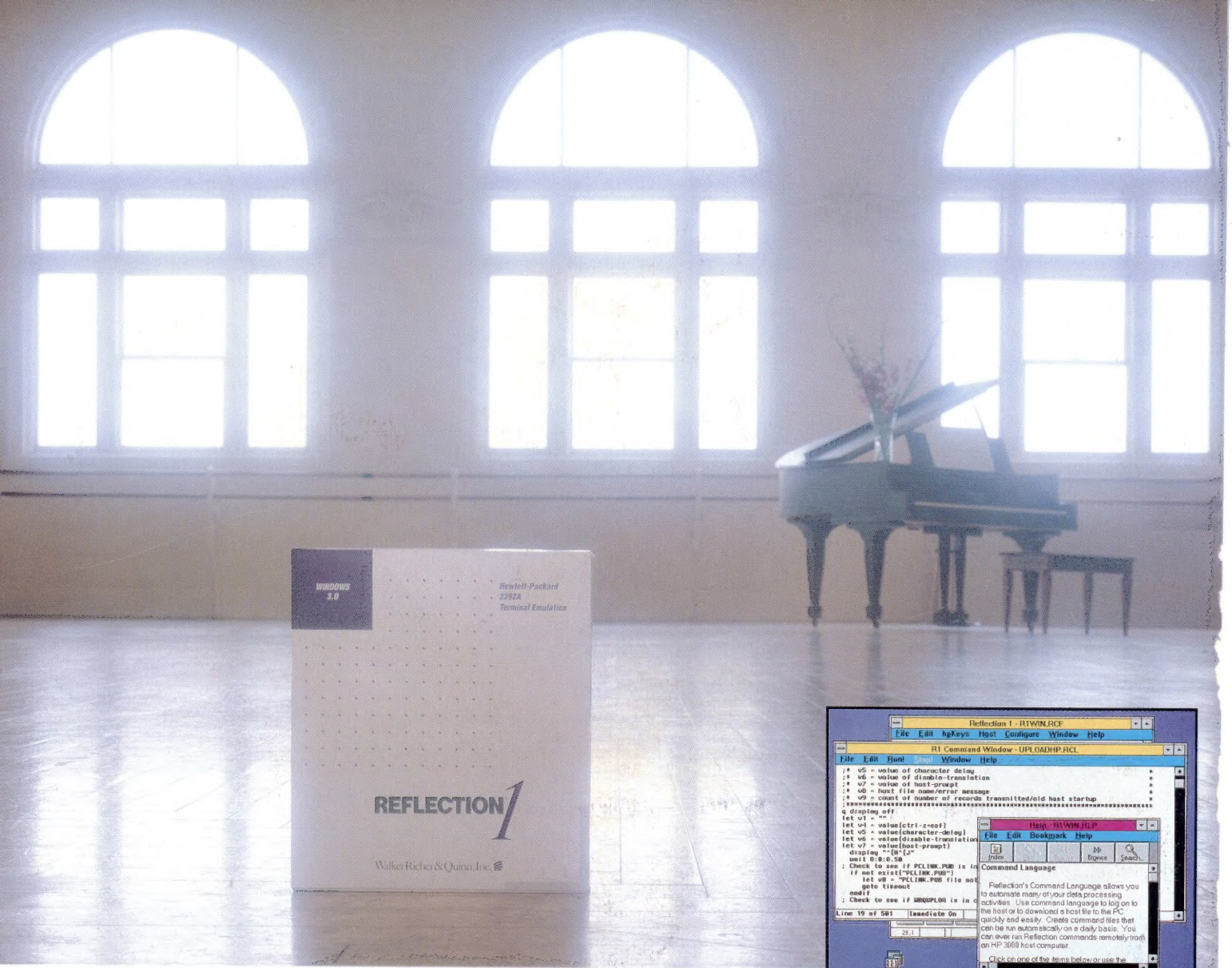

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